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RAIL-ROAD NEWS.

Railroads of the United States.

The Railroad Journal has a very interesting article on the railroads of the United States. There are 10,814½ miles in operation, and 10,878½ in progress of construction. New York stands at the head of the list, having no less than 1,826 in operation. Pennsylvania stands next, having 1,146 miles constructed. Massachusetts, 1,089. Ohio, 828,—the greatest of the Western States. Georgia has 754,—the next greatest. Ohio has 1,892 in progress, and Illinois 1,409, Virginia has 818 in progress and 478 completed. Ohio, when her present lines are completed will be a-head of New York. In Ohio, Illinois, Indiana, Iowa, Alabama, and other States where bituminous coals are plenty, coke will soon be all the fuel employed on railroads. This will make travelling there far more comfortable than on those roads where wood is used for fuel.—The New England roads cost $45,000 per mile; the New York roads $40,000; the Southern roads only $20,000—in the valley of the Mississippi. This is owing to the favorable state of the country, it being more level than in the Eastern States, where mountains and stones are so abundant and permanent in growth and grandeur.

There are now more railroads in the United States than in all the world beside. It is true that no country of an equal size has so many railroads as England, but then it is a densely populated country; ours, on the other hand, is sparsely peopled. This shows the enterprise, commercial prosperity, and, we may say, the active moving propensity of our people.

Russian Railroad.

The fares on the railroad lately opened from Moscow to St. Petersburg are—first class, 19 silver rubles, about $15; second class, 13 silver rubles; and third class 7 silver rubles. A passenger train runs daily from either city. The time occupied is eighteen hours, and passengers are limited to one pood (thirty-six pounds) weight of luggage, for which they pay eighty copecs, or about sixty cents. The freight trains charge for grain and flour about $6 per ton; hemp, flax, &c., about $8; and other articles about $22 per ton. Bulky goods are taken by measurement, and separate wagons, holding about 500 pounds weight, are let at about $60. The time of the freight trains is forty-eight hours.

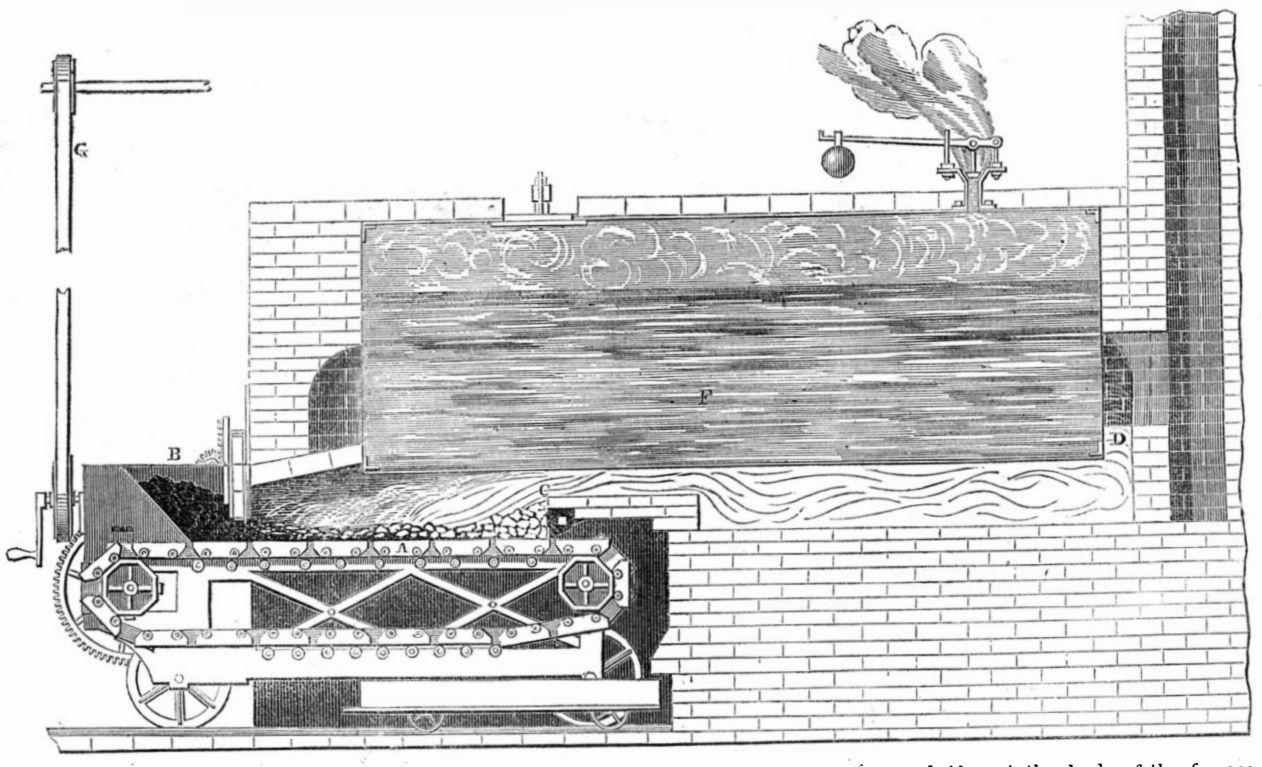
Railroads in Alabama.

Alabama is moving actively in the construction of railroads. Five lines are in the course of construction, the length of which is 861 miles. The cost will be over $13,000,000. There is not one of our States that will be more benefited by railroads than Alabama, and there is none where they can be so cheaply constructed.

Erratum.

Last week, in our notice of the passengers carried over the New York and New Haven Railroad, the passengers, 298,020, are set down for 1851, instead of 1850.

JUKE'S SMOKE-CONSUMING FURNACE.



In Britain, where nothing but bituminous coal is used as fuel, there is a continual cloud of smoke hanging over every city. In fact all the houses look like smoked hams, and after a fall of snow, the soot will be found (for then it is observable) lying in layers on the top of it. In manufactories, long sealks or chimnies have been employed to carry off the smoke, as the proprietors could be sued for damages by private residents. This smoke was a dead loss, for it was carbonic oxide, which, if mixed with oxygen, would inflame and give out a great deal of heat. Many plans have been brought forward—and that long ago—for consuming the smoke; and although scientific men said it could be burned, and should be burned, still no very efficient measures were taken to do this, generally, until last year, when the British Parliament passed a law which was to take effect this month, rendering it imperative for the owner of every furnace, for engines, bake-houses, gas-works, and almost every business in London, to make his furnace consume the smoke. In this part of our country, where anthracite coal and wood are used, the question is not of much importance, but in Pittsburg, Pa., in Ohio, Indiana, Illinois, and many other States, where the bituminous coal is so plentiful, and where—after the timber is cut down—it will be exclusively used, the question of consuming the smoke is one (will be, at least) of great importance. We presented a plan in our History of Boilers, last week, for this purpose, and another on the same page this week. We also present the present furnace—the engraving being a vertical section, because it is one which is now in use in London, and has been highly commended by the "Expositor."

A are the fire bars, formed into an endless chain passing over two drums, one at the front and the other at the back of the furnace; they are moved forward by hand. by the crank handle shown, or slowly by a strap, G, coming from a pulley on a shaft worked by the engine. The power required to move it is stated to be one-twentieth of a horse-power—the bars travel at the rate of six feet per hour. B is the hopper for feeding in the coal. The door of the furnace lifts up, thereby it forms a gage for admitting the fuel, so that the fire is kept level from one end to the other. C is a stop or bridge at the back of the furnace therefore all the clinkers, &c., are carried under it, and falls down into an iron carriage, below. D is the throat of the chimney flue. E is the chimney and F the boiler. All these parts are easily understood. The burning away of the fire-bars is prevented by their constant motion. The whole of the apparatus runs like some of the endless platforms of our railroad horse-powers. The fuel, when first introduced, parts with its more volatile products at the mouth of the furnace, and is carried over the red-hot fuel, where it meets with atmospheric air coming up between the grate bars, rendering it wholly combustible and giving off only carbonic acid and ammonia and some sulphur, but no smoke. Brunton was the first who employed revolving furnace bars, but his was not a rectangular endless web of bars.

This kind of furnace has been employed for some years, and is now in use at the Mint, in London, and some other large establishments. It is exceedingly simple, and might be adopted by those who were satisfied that it would prove beneficial to them.

Mechanics' Institutes in England.

While many mechanics' institutes which once flourished in our country are now dead, sleeping, or in a very precarious condition, it is pleasant to know that in England, where many such institutions were once in the same state, they are now being resuscitated, and are springing up vigorous and spirited. We hope the example will be followed by our mechanics. We have heard good news about such institutions from different parts of our country within a few weeks. If we mistake not, the New York Mechanics' Institute is the oldest in our land, yet it has long been almost in a languishing state. The Maryland Institute in Baltimore is a young institution, only three years old, yet it possesses one of the finest buildings in our country, and by far the largest hall. There should be a mechanics' institute in every village, the membership should be wide of range, open to all classes, but the objects of its influence should be the acquirement of useful information. In England, the mechanics' institutes have annual soirees, joyful, social, parties, and some excellent speeches are there made by invited guests, the proudest of the land accepting invitations with great pleasure, never looking at political capital. If it was for nothing more than conversation every village should have a mechanics' institute. The rooms should be neat but well furnished, and there the old men should be Ulysses to the young. We have travelled over a considerable extent of country, and it has often grieved us to see how many young men, and old men too, in our cities and villages, crowded in our bar rooms and stores, to talk nonsense—worse than nonsense, and nothing else. It is a shame to us as a people, and we should reform ourselves in this particular. There are some men when they get up to make a speech—our political leading men are very guilty of it—they do nothing but flatter, flatter. This is not right; that man is more our friend who tells us our faults, than he who flatters our good qualities. We advocate mechanics' institutes as a system for the mutual improvement of all classes—all classes we say, for one must effect all for good or evil.

The city of Schenectady was lighted with gas for the first time on last Monday evening.

Cancer.

This terrible disease is said to have greatly increased in England during a few years, insomuch that a cancer hospital has just been established in London, and is already effecting an immense deal of good. In 1850, before this hospital was established, no less than four thousand five hundred and eighty-six persons died in England of this frightful malady. Of these, three thousand two hundred and twenty eight were males.—[Exchange.

[We suppose the increase has only increassed in the ratio of the population. The erection of a Cancer Hospital is no evidence of an increase of the disease.

New Steamship for the Cunard Line.

A new steamship, named the Arabia, for the Cunard Line, was launched in Greenock, Scotland, last month. She is larger than the Asia—being 2,400 tons, burden with engines of 1,000 horse-power. She will therefore be as large as the Baltic.

The Steamship Golden Gate made the passage from Panama to San Francisco in 13 days and 6 hours; this was going it in a hurry.

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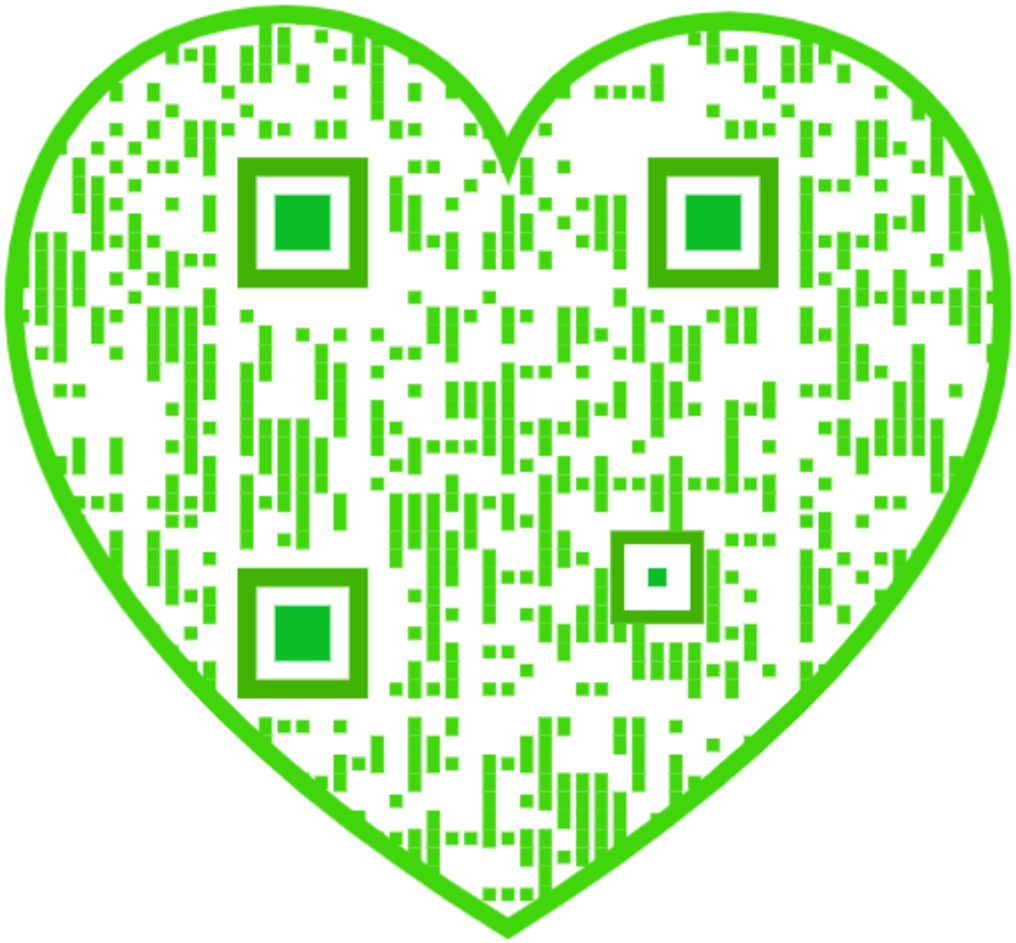


MISCELLANEOUS.

Circular Saws.

We hereby present two interesting communications on Circular Saws; they will close the subject, at least for the present. We are much obliged to our friends for their kindness.

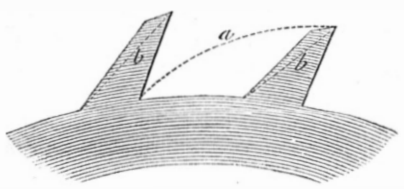
MESSRS. EDITORS—Having been for the last fifteen years more or less engaged in the running circular saws, I cheerfully give the result of my experience and observation. In the first place it is necessary that the saw be true on the face, and of an even thickness; the shaft or arbor should be so fitted up as to have no play or movement endwise. For a saw of twenty inches or upwards, the points of the teeth should be at least three inches apart. File them with a 6 inch, three-squared file, as being the most economical; file the front of the teeth in such a manner as that, should the line be extended across the saw, it would form a segment of one quarter the circle of the saw; file square across, and make the length of the tooth equal to one side of the file, which will be long enough for any sized saw; set the teeth just enough to have the saw clear itself in the timber, and be very careful that both sides are set alike or equal. But above all things, keep the teeth sharp pointed, for it is as impossible to make a circular saw run straight or free when it is dull, as it is to make a ripping hand-saw run in that manner under the same circumstances; and a circular saw should always be kept as sharp as a joiner keeps his ripping saw. When the above directions have been followed, I have never known a saw to heat, or run out of a straight line, when fed by machinery, or steadily by hand, unless the timber sprung so as to close up to and press against it, in which case great care is necessary to save it from heating. The most of the heated saws that have fallen under my observation (and they are many) have been injured by careless or injudicious feeding.

In making the above observations, I have taken it for granted that any one undertaking the care of a circular saw, would keep the teeth all of a length, or the saw perfectly round or circular. C.

MESSRT EDITORS—When I read the inquiries of R. W. W., of Florida, in No. 12, Vol. 7, of the Scientific American, how to remedy the evils in running circular saws, and you called for information on the subject, I watched with deep interest the result. Hoping there would be that particular and practical information given which many hundreds now need, and without which they will experience a sea of trouble before they will overcome (if they ever do) the evils complained of by R. W. W. There are, no doubt, a few mechanics who have overcome nearly all evils in running circular saws, like Wm. Perkins, of North Carolina—and those are the men who should reveal their knowledge and experience to many who much need it, yet never will possess it unless communicated to them by some one. I have had constant experience in the running of circular saws of all sizes for twelve years; still, I must confess, it was not until very recently that I have been satisfied with the result of my own experiments and knowledge upon the use of circular saws. One year since I put a forty-four inch circular saw into a mill, on a fluctuating mountain stream, and have, within that time, sawed more than one million feet lumber from logs—a large proportion of it hard wood—and with a very unsteady supply of water.

I believe the use of circular saws to be yet in its infancy, and the time not far distant when several dozen of forty or 50 inch circular saws will be strung on one mandril, doing more and better work than five gangs of straight upright saws can do—(and nothing but the want of sufficient capital prevents me from seeing it demonstrated soon). There are many minute things which are important in order to do good work with circular saws. Some of the most important of them I believe to be the right number of teeth, of the right size and shape: the saw always to be kept perfectly round and sharp, with considerable set: the saw to be run at the right speed, and the carriage that feeds the log up to the saw to move with perfect accuracy. If I were to make a rule as the result of my experience, —which of course would be variable according to different circumstances—I should say that the teeth of large sized circular saws, for logs, should be four inches apart and stand forward, so that a line drawn with the front of the tooth would cut off one-third of the plate. A line should be drawn around the saw one and three-quarter inches from the edge, then cut away with the gummer all the plate to that line, leaving only the tooth of sufficient strength to retain the set, which ordinarily need not be heavier than the common upright saw tooth and similar in shape. The velocity of circular saws should be 4,000 feet per minute on the cutting edge, which would vary their revolutions, according to size, from 250 to 4 or 5000 per minute. The power required is in proportion to the labor performed, I use from 3 to 10 horse power. Experience has satisfied me that one of the greatest evils in running circular saws has been occasioned by the want of sufficient space between the teeth for the sawdust. And still there should be as great a number of teeth as possible, and at the same time leave the required space. It will be said that the more teeth in the saw the smaller the chip taked by each tooth under the same feed, hence there is not so much tendency to deviate and incline with the grain of the timber. I know of no reason but experience, why so much space is required between the teeth. Many have reduced the number of teeth in their saws, and at the same time let the blank between the teeth fill up, and all their former troubles have returned with two-fold severity.

I would advise any one purchasing large saws to order them 5-32 of an inch thick on the edge, and 1-4 at the centre ground with a true taper. A saw of good thickness will waste no more timber than a very thin one, it will run more perfect, and require less set.



The accompanying engraving represents the shape, &c., of my saw. The dotted lines, *a*, show the shape of the teeth as the saw came from the manufacturer. I use a broad mill saw file, and never file only the front and top of the tooth. I find many things in favor of this shape of tooth in the front. The shape of the tooth remains the same as it wears down; it is easier filed, and with more accuracy. It is a matter of no small economy in the saving of saws, from what it would be to bring the tooth to a small angle on the point, like the dotted lines, *b b*. M. M. MANLY.

East Dorset, Vt.

Governor Hunt and Mechanical Trades in State Prisons.

"From a careful examination of the subject, I am convinced that the unfavorable results at the Clinton Prison may be attributed in part to the incomplete execution of the original plan, which included the necessary works for making iron and manufacturing it in some of its ruder forms. That part of the design has been neglected: no forges or furnaces have been erected, and the employment of prisoners has consisted in excavating and separating the ore—an operation which affords but little profit in the present condition of the iron market. The difficulty has been increased by the failure of ore on the land held by the State, making it necessary to pay a heavy rent for the privilege of working on an adjacent tract. A result much more favorable may be produced by erecting furnaces for smelting and manufacturing the ore on a scale sufficient for the employment of two or three times the present number of convicts. The additional expense of maintaining a larger number would be comparatively small. The labor of the convicts would be much more remunerative in the manufacture than the excavation of the ore. Other than financial considerations may be urged in favor of this policy.

Complaints continue to be made of the employment of too large a share of the convict labor in mechanical occupations, which conflict with the interests of honest citizens engaged in similar pursuits.

This evil, unavoidable to a certain extent, should be diminished as far as practicable. A leading motive in the establishment of the Clinton prison was to withdraw a large class of prisoners from mechanical employments. But that purpose has been only partially fulfilled. Aside from other inducements, I am of opinion that the management of all the prisons would be improved by transferring some of the convicts from Auburn and Sing Sing to Clinton. At Auburn the number of prisoners sometimes exceeds the number of cells. The increase of criminals consequent upon the growth of population and other causes, will soon produce the same result at Sing Sing. The evils produced by over-crowding the prisons beyond their regular capacity, are too serious to be tolerated. It cannot be doubted that the future necessities of the State will require a third prison. After making so large an expenditure upon the establishment at Clinton, its abandonment cannot be seriously entertained, and I would recommend that proper measures be taken for erecting such works as are necessary to carry the original design into full effect.

The number of convicts in the several State prisons on the first of December last, was as follows:—Sing Sing, 830; Auburn, 771; Clinton, 113; total, 1,714."—[Gov. Hunt's Message.

[The question of learning mechanical trades in our State Prisons was made the subject of peculiar agitation for a number of years, by the old Mechanics' Associations. The old "New York State Mechanic," published by Joel Munsel, Albany, N. Y., and conducted with ability, advocated the mechanic's cause. Their efforts were successful in getting a law passed, to prevent the learning of trades in State Prisons. This law, we have been told, is a dead letter. The Clinton County State Prison was designed by our friend Ransom Cook, who laid the plan and was Superintendent for some years. Had he still been in charge of it, it would no doubt have been in a more prosperous condition to-day. Interested parties, we are told, endeavored to destroy it. Governor Hunt, we see, takes up the subject again, and comes to speak of it in a spirit favorable to the views of its originators. The mechanics of this State have justly complained of State Prison competition. It is true the number of convicts in all the Prisons cannot affect the mechanical interests of the State much, but the morality of the question, is one which grates hard upon their consciences and affects their honor in the nicest point.

Treasurer's Report---Gold and Silver Currencies of the World.

By the Report of the Secretary we learn that the revenue last year, 1851, was $52,312,-979,87; surplus on hand, $6,604,544,49, total in Treasury, $58,917,524,36. Expenditures, $48,-005,878,68; leaving a balance of $10,911,645,-68. It is estimated in the Report that on the first of July, 1853, there will be a balance in the U. S. Treasury of more than twenty million of dollars. This is a very different account of finances from those of all the nations of Europe with the exception of Britain. All those countries exhibit balance sheets of a greater outlay than income. The Report says that from information in possession of government, it is expected that one hundred millions of gold will be obtained from California for some years to come, Mr. Corwin sets forth the reasons why our silver coins command a premium of two per cent. We quote the extract entire in respect to the gold and silver coinage of different nations, as it is a matter of great interest to every citizen.

"The relation of gold to silver in the legal coinage of the United States, is as 15·988; in Great Britain as 14·288; and in France as 1 to 15·499. Thus it will be seen that one ounce in pure gold will, in the United States, be equal to that produced from the coinage of 15,988 ounces pure silver: in Great Britain it will be equal to that derived from only 14,288 ounces pure silver; and in France to 15,499 ounces. So soon, heretofore, as the state of our foreign commerce, as is now the case, requires an exportation of specie, it is obvious that our silver coin must be exported whilst it can be procured, till the demand for exportation is supplied.

From the operation of this law of commerce arises the present scarcity of our silver currency. At this time, though our silver coin commands a premium in exchange for gold, it is, notwithstanding, still found more advantageous for shipment abroad than gold. In consequence of the premium on silver, though the relative legal value between it and the latter is as 1 to 15,988, the real intrinsic market va- is only about 1 to 15·675. A debtor, then who offers silver in payment must give it at the rate of 15·988 ounces in coin, by which he loses 313-thousandths of an ounce, for with 16,675 ounces he could purchase 1 ounce of gold, which latter would be a legal tender for the same debt. It is to be borne in mind, however, that though the relative value of coin in Great Britain is as 1 to 14·288 that is not the relative bullion value of the two metals, which is about 15·716, the silver coin of that country being about ten per cent. less in value than silver bullion of the same weight; that is to say, the silver coin of that kingdom will go ten per cent. farther in paying debts than an equal weight of pure silver bullion at the standard value. A difference so great in the value of the two species of coin has not, of course, been the result of either miscalculation or mistake, but was brought about by design, and with the same views which, it is believed, will render it necessary for us to adopt a similar plan, in order to retain and maintain a silver currency. The obvious policy of this system was to secure the gold and silver coinage of Great Britain against the fluctuations arising from the relative value of gold and silver bullion there. In Great Britain 14·288 ounces of silver coin is equal in payment to 15·988 ounces in the United States, and 15·499 in France. It is very clear, then, that there is no inducement to export silver coin to either country from Great Britain.

Though the British government manufactures one hundred shillings in coin from bullion intrinsically worth only ninety shillings, it does not permit individuals to bring ninety shillings in bullion to the mint and receive in exchange one hundred shillings in coin; but on the contrary, the community is obliged to pay the par value of all the silver coin it requires. It must give £5 in gold or silver for one hundred shillings in coin. Coinage being a monopoly by the government, the latter can impose such terms as it deems necessary and advisable, and the public, within certain limits, will pay the government its own price for the benefit of the mint stamp.

In fixing, therefore, the proper relative value which should be established between our gold and silver coin, it should not be done with regard to the value of our coins in reference to foreign coin, but as to their intrinsic value, as bullion in foreign countries.

The relative value of our gold and silver coins is, as already stated, as 1 to 15·988; and the bullion value of our silver coin in England, is 15·716, being a difference of 272 thousandths, or nearly two per cent. It follows then, as a matter of course, that on all occasions where the course of our foreign trade requires heavy shipments abroad, our silver coin will be first sought after for that purpose, even at a premium; and consequently, will disappear from circulation, as it has already done to a very great extent.

There seems to be but one immediate and direct remedy for this evil, and that is the one which has already been adopted in Great Britain, of changing the relative value between gold and silver coin, by reducing the intrinsic value of the latter. The opinion of the officers of the mint (in which judicious persons, whose opinions are entitled to great weight, concur) is, that this change could be advantageously made, by making our dollar weigh three hunered and eighty-four grains, and the smaller coins in proportion; so that eight hundred ounces should be worth, by tale, exactly $1,000. The director of the mint, in a communication on the subject, says:—"If such a scale of weights were adopted, the relation of silver in such pieces to gold would be as 14·884 to 1; and if the present true relation or bullion value is about 15·675 to 1, the new proposed silver coin would be even valued by law about five per cent., a very small advance, and far less than in British silver or in the worn Spanish coin which now monopolizes our circulation.

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Qualities of Timber---The Proper Time for Cutting it.

[Concluded from page 131.]

There is another error in that of preparing yellow pine timber in the woods, both for private use and for naval purposes, it being absolutely necessary that the sap should be excluded; the timber should be eight instead of four squared, thus in effect only taking off the sap (on account of the very best of the timber being next to the sap); this would enable the builder to work out water-ways and all similar pieces, without cutting in as far as the pith on the exposed side of the piece. The present manner of cutting yellow pine timber is a reckless waste; the very best parts of the tree being left in the woods. Inspectors measure square logs clear of sap, and the consequence is, that but a very small three-cornered strip or vein of sap is left on the corners; whereas, if at the centre of the length of the log, the sap were removed, and the log were measured as in other girth measurements, the most valuable parts would come into private and public yards: and although it would be somewhat awkward at first to receive timber in this manner, being accustomed to the square log, yet the price per cubic foot would actually be less, and the timber-getter would save in labor what he paid in extra hauling and freight, and not only so, but he would get paid for all the timber he brought. The Government would save thousands of dollars, besides having better pine timber, were the Navy department to have yellow pine forests at their command rather than timber sheds stored with pine timber, besides retaining the life of the timber by not having the turpentine drawn from the tree before it is worked into timber. As we have already remarked, the most dense timber is not the best or most durable, because of the amount of turpentine it contains; it is often rendered so near the butt, in consequence of the tree having been tapped while standing, in order to draw off the turpentine. We would prefer the quality of pine we have alluded to in its pristine state, without seasoning, for durability, provided it were properly ventilated when in the ship. With regard to the density of white oak, it may, with strong propriety, be assumed that the quality is in the same ratio as the density; but we shall discover that the tables of specific gravity do not furnish an index for determining the best quality, inasmuch as they show the squared white oak timber cut in December and May to be the heaviest, while at the same time that which was cut in January and July, was of the best or better quality. In order to detect this supposed discrepancy, let us follow the subject further:—The timber in bark will show that our first conclusions were correct, inasmuch as the timber cut in July is of the greatest density, and that cut in January differs but a trifle from that cut in December; hence we are inevitably brought to the threshold of this conclusion, that no table of specific gravities for white oak timber is reliable for determining the quality, unless its weight can be shown in the bark. The reason of this discrepancy between round and squared timber, in its density, is found in the fact that the texture of the grain of some trees is better adapted for receiving the juices than others throughout the entire transverse section, while others receive the supply chiefly through the sap. This latter kind is the best quality; and, as a consequence, is likely to prove the most durable, as well as being the strongest. There may, however, be exceptions even to this, as a general rule. With regard to the specific gravity of the live-oak, as shown by the tables, we clearly discover that the sap-wood is lighter than the heart, inasmuch as the bark being thin, could scarcely reduce the weight as much as shown by the tables. The tables will not warrant this conclusion of white oak, inasmuch as we find that which was cut in March was heavier in bark than when squared. But although the sap of live-oak and white oak is less durable than the heart, it is generally received with the heart, and as merchantable timber. The lasting property of live-oak consists chiefly in being entirely void of that acid juice which white oak contains; but this is not all, the whole of the capillary tubes seem to be completely coated and filled with a greasy glutinous substance, that is not found in the sap, which is doubtless the reason why the sap is not rendered equally durable; this substance may be brought out for analyzation by steaming; it takes steam nearly or quite as readily as yellow pine.

It is doubtless true beyond a doubt, that in many instances more than one-half of the actual gravity of timber is made up of the juices; hence it is plain that the seasoning process is but a removal of this moisture by evaporation; the inquiry then follows, which is the best mode of evaporating this moisture, by slow or sudden means? and should we be deprived of the use of the timber while this operation is being performed? We think the day is not far distant when it will be proved by ocular demonstration that timber can be seasoned in the vessel, without storage for that purpose, by a proper mode of ventilation. Experience has shown that vessels employed in hot climates (unless the timber be well seasoned) rot in a very short time; but let this same vessel be employed in a climate colder than that in which she was built (or the timber was cut), and she will continue sound for years; from this we may learn, that vessels built of green timber, or that partially seasoned, should not be sent on stations where the order of seasoning is reversed, and a fermentation of the acid takes place, which will rot any timber vessel within a very few years. Enough might be said on this subject to fill a volume, and we hope that the untiring zeal of Mr. Jarvis, in his philosophical investigations, will elicit such information as shall fill up the great chasm in mechanical knowledge, so necessary in the construction of this stupendous fabric, and upon a subject of which the mechanical world is avowedly ignorant, and we are quite well assured, in our minds, that a volume upon this subject would meet with public favor."

[On page 374 of Mr. Griffith's work, there are monthly tables for a year, made up by Mr. Jarvis. showing the specific gravity of square and round live oak, white oak, and yellow pine. There is also a table of the specific gravity of dry timber of various kinds, stating where it had been felled, and how long it was kept dry. The piece of square live oak cut in July was of the least specific gravity, its coefficient was equal to 1·239; that cut in December and January was the heaviest, the coefficient being 1·823. The white oak cut in June was of the least specific gravity; that cut in July was the greatest—the former was equal to 1·032, the latter to 1·123; this is something singular. The square yellow pine cut in March was the lightest, that cut in April the heaviest, the former was equal to ·581, the latter ·683.

It has often appeared to us that the common custom, in our navy yards, of piling up live oak and keeping it in heaps, year after year, to season it thoroughly, was unworthy of modern science. It is not enough to say; that "oak; soaked for a long period in salt water and then left to dry for some years, gets well seasoned and is more durable than any other when worked into a ship or other sailing vessel." The reason why dry rot attacks the timbers of vessels in Bermuda so quickly, in comparison with what it does in Halifax—[the British Government have paid for the whistle in removing their Naval Depot from the latter place]—is no doubt owing to fermentation, and takes place in liquors, sap, &c., at a temperature averaging from 62 to 73°. It appears to us that live oak and other timber could be seasoned and treated better and quicker by new mechanical and chemical appliances; for example, by forcing a current of hot air through a close room containing the timber. The temperature of that air could be regulated to the exact degree found to be the most suitable for different kinds of timber. It is our opinion that a solution of alum and the sulphate of copper would prove to be better than any we have seen recommended as a wood preserving solution. After being treated with this solution, the moisture could be expelled by the hot air process. The principle of treating timber with some preservative solution, or material, is to produce a chemical combination with the component juices, or whatever they may be, of the timber and the applied substance, so as to produce an insoluble compound, just upon the same principle that hides are treated with tan, to form leather—salt, alum, sulphate of copper, combine with the sap of timber, and form compounds of a nature like tanned materials. Timber soaked in alum and sulphate of copper, lifted out, and then treated with a current of hot air, say at 230° forced in with a blower, we think, would produce *cured timber* for ship-building and all other purposes, superior in every respect to any yet produced by all the processes hitherto tried for the same purpose.

We suggest this process to those engaged in preserving timber. It is our opinion, that it will effect in a week what it now requires years of time in the curing of timber.

Chemical Products at the Great Exhibition.

The members of the London Society of Arts met together last month to hear a lecture by Mr. Jacob Bell, M. P., on the chemical and pharmaceutical products exhibited at the World's Fair. We are indebted to the patent Journal for an abstract of the lecture. It will be noticed that the Meat Biscuit of Mr. Borden, now of this city is particularly mentioned.

George Moffat, Esq., M. P., took the chair, and introduced Mr. Jacob Bell, M. P., to the meeting. The lecturer said that it had been at first disputed whether chemical and pharmaceutical products were proper subjects for exhibition, and by many the proposition to admit them was ridiculed as a mere turning out the whole contents of a chemist's or apothecary's shop into the Crystal Palace. As, however, the scheme of the Great Exhibition was to bring together a collection of specimens of every kind of product and manufacture from all parts of the world, it was finally determined that chemical products should be admitted as well as others. One cause of this objection to their admittance was, the general notion that the mere outward form of chemical substances presented nothing attractive to the eye; but those who remembered the exceedingly beautiful specimens of crystals exhibited in that department, now would agree with him that chemistry afforded as many interesting objects to the sight as any other of the sciences. In proof of this, he might state, that in consequence of the beauty of those specimens, it had been considered that crystals produced by chemical processes might be adapted for drawing room ornaments, and several persons had requested him to mention those which he thought most fitted for such a purpose. Thus there was one instance of a new branch of trade being created by the Exhibition.

A very interesting collection of pharmaceutical plants was exhibited by Mr J. H. Kent, of Stanton, near Bury St. Edmonds, the specimens were very choice, and had been dried with great care, preserving all their peculiarities, odor, &c. Among many novel productions which had been made known by their exhibition in the Crystal Palace, was the preparation of an extract from the pear-tree, much used in Italy as a substitute for quinine, but which was quite unknown in this country before. One of the most singular applications of chemistry sent for exhibition was a collection of artificial essences of fruits, composed of various acids. The circumstance which led to the discovery of this method of imitating the flavors of fruits, was an analysis of various liquors, in the course of which it was ascertained that the fine flavor of pine-apple rum was owing to the presence of butyric acid, which, on further experiment, it was found would, by the mixture of other matters, be made to imitate the flavor of any fruit whatever.

A useful invention first made known at the Great Exhibition, was an article of food called Meat Biscuit,—a concentrated preparation of animal matter fit for food, and well adapted for sea-voyages, as it would keep for any length of time. This invention had been patented in England, and the Jury awarded it a prize. An extensive collection of specimens of ultramarine was shown.—Formerly this pigment was manufactured only from lapis-lazuli, and although a vast number of experiments had been made to procure it by other means, it was not until 1820 that M. Guimet succeeded in manufacturing it. The mode which he practised speedily found its way into England, and now, instead of its being a rare substance, fetching five pounds per ounce, it was sold as low as tenpence per pound. The use of phosphorus in the manufacture of lucifer-matches was productive of a most dreadful disease, those exposed to its fumes seldom living above a year or two, the bones of the face being rapidly destroyed. Moreover, from its inflammable nature, phosphorus was exceedingly dangerous to transport from place to place; these objections were, however, entirely put an end to, by a new mode of manufacturing it, so that it was rendered harmless. This admirable invention had been introduced and patented in this country by Messrs. Sturge, the eminent chemists at Birmingham, who were engaged in manufacturing it upon a commercial scale. For many years scammony, as imported into England, was largely adulterated with starch and chalk, none being ever obtained in a pure state. At last one of the importers asked the reason, and was informed by the native merchant from whom he obtained it, that at the price he received he was obliged to adulterate it, but that, if he paid in proportion, he could supply it in a pure state. From that time "virgin scammony," as it was called, was regularly imported into England.—Strange to say, however, it had not yet found its way into the Continent, and some of the foreign chemists, who came over here, declared that they had never seen pure scammony until they beheld it in the Great Exhibition, and took an ounce or two back with them as a curiosity. They might, therefore, expect that it would now form an article of export from this country to the Continent. Mr. Bell then proceeded, at great length, to notice the various chemical substances contained in the Exhibition.

In concluding, he expatiated upon the benefits which had accrued to chemical science from the opportunities afforded by the Great Exhibition of comparing what had been doing by each country.

Mother of Pearl.

Mother of pearl is the hard, silvery, brilliant internal layer of several kinds of shells, particularly oysters, which is often variegated with changing purple and azure colors. The large oysters of the Indian seas alone secrete this coat of sufficient thickness to render their shells available to the purposes of manufactures. The genus of shell-fish called Pentadinæ furnishes the finest pearls, as well as mother of pearl; it is found in greater perfection round the coast of Ceylon, near Ormous, in the Persian Gulf, at Cape Comorin, and among some of the Australian seas. The brilliant hues of mother of pearl do not depend upon the nature of the substance, but upon its structure. The microscopic wrinkles or furrows which run across the surface of every slice act upon the reflected light in such a way as to produce the chromatic effect. Sir David Brewster has shown that if we take, with very fine black sealing wax, or with the fusible alloy of D'Arcet, an impression of mother of pearl, it will possess the iridescent, appearance. Mother of pearl is very delicate to work; but it may be fashioned by saws, files, and drills, with the aid sometimes of a corrosive acid, such as the dilute sulphuric or muriatic; and it is polished by colcothars.

To Cure the Taste of Turnips in Butter.

The following from the Gardener's Chronicle, a most able periodical published in England, is of great interest to all our northern farmers:—

"About six or seven years ago, I saw it stated in a provincial newspaper, that to feed cows with turnips immediately after being milked, and on no account to give them any a short time before milking, prevented the milk or butter from tasting of turnips. The method I pursue is this:—immediately after being milked in the morning, they get as many turnips as they can eat. During the day they are fed on hay, and immediately after milking at night they get the same quantity of turnips. The milk and butter are very much admired by all who take them, both for color and flavor, and I have often been called upon to give a statement of our feeding by visitors. I have several times given the cows turnips a short time before being milked, just to prove the thing. On such occasions the milk and butter tasted very strongly of turnips."

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NEW INVENTIONS.

Improved Anti-Friction Box.

Mr. Henry Stanley, of Lyman, Grafton Co., N. H., has invented a good improvement on Journal Boxes. It relates to the employment around a journal or axle, of anti-friction rollers, which are allowed to roll round the cylindrical interior of the box. The manner in which said rollers are applied is different from that in other journal boxes; the rollers, in this case, consisting of hollow tubes, which fit easily on a series of spindles extending between the two rings or plates, which fit within the box and around the shaft, without touching either. This allows the rollers to keep rolling round the shaft, and keeps them at a proper distance apart, and at the same time they take the whole weight of the shaft on their peripheries. In other roller journal boxes the rollers are generally fitted with their spindles into end plates, and they do not revolve round the shaft or axle, but revolve on their own fixed spindles, and as they do not touch the inside of the box, their spindles take all the weight upon them and they soon wear untrue, and do more harm than good. In other boxes, rollers are put in loosely, and sometimes balls have been so put into journal boxes: both rollers and balls thus arranged in journal boxes, foul—as it is termed—one another, and wear unevenly on their surfaces in a very short time; this improvement is designed to obviate these difficulties.

Measures have been taken to secure a patent.

Improved Saw Set.

Mr. A. Bachelder, of Lowell, Mass., has taken measures to secure a patent for a good improvement in machines for setting saws. The nature of the invention consists in forming the saw set of two jaws, the under one of which is movable and so arranged as to be secured at a greater or less inclination as desired, by means of a set screw. The saw is placed between the two jaws and secured between them by a thumb screw, which upon being turned in the proper direction, presses the upper jaw firmly upon the saw; the saw is placed between the jaws, so that the upper part of the teeth are just below the lower edge of the upper jaw and two gauges, one at each end of the jaw, fitting between the saw teeth. A dog which works on a horizontal rod, is made to act upon the saw teeth by the blow of a hammer, by which operation the teeth are bent till they bear against an inclined bed, and thus the desired set is given to the teeth, by properly adjusting the under jaw spoken of. All the teeth will be set evenly, as each tooth is made to bear against the inclined bed. The instrument can be made at a small cost, and saws can be set correctly and expeditiously by it.

New Night Signal for Steam and Sailing Vessels.

Mr. Thomas H. Dodge, of Nashua, N. H., has invented some excellent improvements in night signals for steam and sailing vessels, for which he has taken measures to secure a patent. The improvements consist in the employment of two lights of different colors applied in the same diametrical line to a revolving vertical disc, which is surrounded by a stationary ring upon which the points of the compass are graduated. By turning the disc to bring the lights in such a position, that an imaginary line drawn through them, will intersect that point of the compass upon the ring, corresponding to the actual point in which the vessel is heading; the color of the light, which is the pointer, being known, the course of a vessel will be visible at night to the crews of other vessels, and collisions may thus with certainty be prevented.

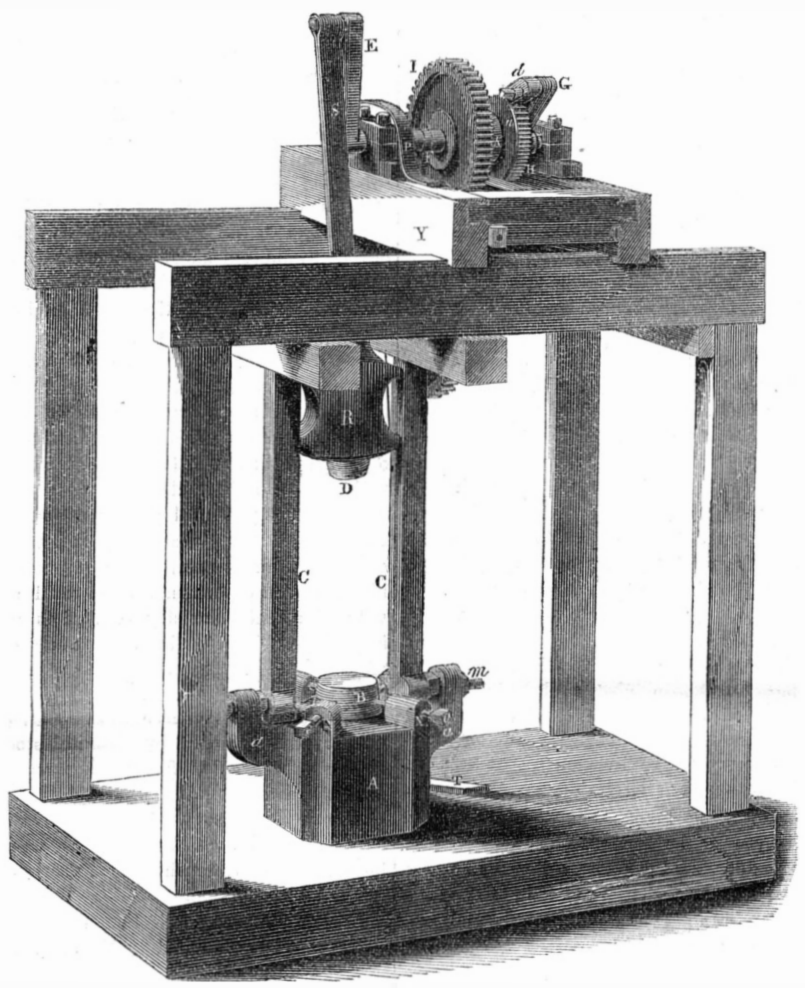
Owing to the great number of steamers and sailing vessels which now traverse the ocean, the mighty pathway between Europe and America, it appears to us to be imperative that night signals should be employed on all vessels, more especially steamships. Many accidents have already taken place, by one vessel running down another in dark and murky nights, and such accidents will become more numerous unless stringent measures are adopted to prevent them. It is also a subject of some anxiety to passengers on vessels; they fear collisions. A sailor, to be sure, is placed near the bow on the look-out, but when the spray is dashing over the forward dack, not much dependence can be placed on a sentinel. We hope that all vessels will adopt these signals of Mr. Dodge, which are excellent in every respect, and it would be well to have a look-out box for the sentinel, who should be able to communicate by a bell signal quickly with the commander of the watch

A Want Supplied---New Hand Loom.

A few weeks ago, we published an article from the Scientific American, hinting at some of the wants to be met by future inventions. Among others was a hand loom, to be operated on the principle of the power loom, and cheap enough to be brought into general use. This requirement has been met by Messrs. Mendenhall & King, of Richmond, Ind. They exhibited a hand loom at the Fair of the Wayne County Agricultural Society, in September, which is represented as being very simple in construction, and is operated by merely turning a crank, we believe. It is said to be so cheap as to take the place of the present clumsy affairs in common use.—[Eaton (Ohio) Reg.

[Thus knowledge is increased. A mechanical paper tends to advance the mechanics, the same way that an agricultural paper improves agriculture. It is stated in the Patent Office Report, that the product of wheat in Ohio is increasing owing to the Ohio Cultivator.

IMPROVEMENT IN DROP PRESSES.



The accompanying engraving is a perspective view of an improved Drop Press, for which a patent was secured by the inventor, Mr. Milo Peck, of New Haven, Ct., on the 25th of last November.

A is a heavy bed or anvil; *a a* are two strong horns; B is the lower die on the face of the bed. N N are two of four poppets, through which screws pass to set the die and bind it to its place by O O, two of the four screws. C C are two upright ways, between which the drop or ram acts; *m m* are screw stems, made fast in the outer edges of the ways and passing through the horns, *a a*. They have double nnts to adjust and hold the bottom ends of the ways. R is the drop with the upper die, D, in it. S is the strap, which is attached to the crown of the drop and to the wrist of the crank, E, by which the drop is lifted, and at the instant the drop strikes the crank is swiftly passing its lowest dead centre, and at that moment bends the strap across a cylindrical belt guide, by which the slack of the strap is instantly taken up—the re-action of the drop is caught, and it continues rising slowly, just after the rebound, and with accelerated speed to its half lift, when the speed diminishes up to its resting and locking point. Y is the top frame, H, is the ratchet wheel, and G is the sweep with the dog, *d*, main wheel, &c. There is a crank shaft, which is about four or gve feet long in a large machine, it has two sweeps beside the crank, made fast to it. K is a hub, which runs loose on the crank shaft; I is the main driving wheel; H is the thick strong driving wheel fastened to the hub, K. F is a locking sweep fastened to the crank shaft, and carries the ratchet dog, which has a spring; this dog cannot take hold of the teeth of the ratchet wheel at any time, except when the drop is down and is to be lifted or raised again, it is rendered impossible that the dog should catch the ratchet wheel whilst the drop is falling, or at any time, and this is secured by the guard ring, *u*. The outer circle of this ring is a little larger than the ratchet wheel, and holds the dog above its teeth half around the said wheel, and as the ratchet and main wheel are moving constantly, whenever the drop falls, the sweep, G, falls also, carrying the dog with it beyond the end of the guard ring, and then the dog catches into the moving ratchet wheel, and turns the crank shart with all its sweeps about half round, and then the dog is tripped out of the ratchet notches by meeting the other end of the section of the guard ring, and lodging and resting upon it until the drop is again made to fall, to carry the dog past the ring that it may catch again, raising the drop, &c., as before. There is a jointed segment added to the guard ring for occasional use, to make the dog remain at rest, which is sometimes desirable for fitting and adjusting dies, &c. P is a spring to hold a latch hook to raise the treadle, T.

The drop is now raised and locked, and ready to be tripped for a stroke; when tripped by the treadle, T, the sweep is released and turns quickly with the crank shaft about half round by the falling of the drop, and then the remaining half round by connection with the ratchet wheel and dog, and as soon as it has performed its whole revolution, it is locked at the same time the dog is thrown out of the ratchet wheel by meeting the end of the guard ring, as spoken of before. The common mode of raising the ram or drop, has been to wind a rope round a loose pulley or barrel clutched to a fast one, and when the rope was wound and the drop raised, the clutch was loosened and the drop prepared for a stroke. It was unlatched in various ways to let it fall, when the lifting rope was unwound suddenly, whirling back the loose pulley on which it had been wound, with great rapidity, when the loose pulley was again attached to the fast one, and the slack rope wound up. The first tendency thus to litt the rope was too sudden for commencing the motion of a heavy drop, and was injurious to machinery.

This drop press is built, especially the lower part, like some others, but the sweep raises the drop, the moving gear always revolves in the same direction, re-bounds of the drop are prevented, and there is not that sudden action and re-action of a rope and loose pulley, which is the cause of so much breakage, especially when a heavy drop is employed. There can be no doubt but this is a good improvement on stamping die presses; it operates well and obviates many evils in the common press.

The claim of this patent will be found on page 94, this Vol. Sci. Am. More information may be obtained by letter addressed to Mr. Peck.

Improvement in Head and Tail Blocks.

Mr. E. F. Drake, of Xenia. Ohio, writes us that Mr. Snyder, of Fairfield, O., has made an improvement on Head and Tail Blocks, which supersedes entirely the old method of dogging. "The improvement," he says, "is not a self-setter, but simple and permanent machinery so devised that by means of a short lever one man sets the log to any desired thickness of board in the short space of from two to five seconds moving both ends of the log at once with perfect accuracy."

The improvement obviates the moving of the tail end of the log before backing out of the saw; also the re-adjustment whenever a change of thickness or size of lumber is required. The sawyer has full control of the log at each successive act to move it backwards or forwards, as by the old dogging plan. Mr. Drake has tested the improvement for nearly a year, and considers it all that is desirable. The blocks ca be placed on any carriage; they cost about $150 complete; one sawyer can do as much with them as two by the old plan, and do better work.

Street Paving.

Mayor Kingsland, in his Message, in speaking of our pavements, mentions the fact that the Perrine pavement has proved a failure. This pavement consists of an under-strata of broad flags, with hot pitch run in the seams, then a course of gravel, and above that a course of flag stones for the wheels, and cobble stones for the horses to run on. The cause of its failure was its mixed character; the wheels were oftener on the cobble stones than the flags. The Russ pavement has, of all others, proved to be the most durable, but it also, has not been able to stand the tear and wear. Some portions of this pavement has been grooved,—he does not know how far this may obviate the evil of the large blocks wearing smooth and horses slipping. This pavement cost $6,50 per yard—a most exorbitant price. The grooving will soon wear down and become smooth and slippery like the streets of Naples. The best pavement to make, would be of small granite blocks of about 5×8 inches; this would afford a good foothold at all times for horses.

English Steamers and French Railways.

Thurlow Weed, Editor of the Albany Journal, is now in Europe: in a letter to the Journal, from Paris, he says the English have put on a new and superior class of steamboats to run across the Channel. The distance between Folkestone and Boulogne is 39 miles; this was run over in two hours, making 18½ miles per hours. This is pretty good for a marine steamer.

The cars on the Boulogne and Paris Railway are heated by hot water. The track is so solid and smooth that it is difficult for a passenger to realize that he is travelling. Everything is easy, comfortable, and secure.

Cure for Hernia.

The Boston Bee states that Dr. Heaton, of that city, has recently discovered a radical cure for hernia; perhaps he has.

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Scientific American

NEW-YORK, JANUARY 17, 1852.

Double vs. Single Track Railways.

The American Railway Times comments on the article we presented on page 114 of this present volume. The Times disagrees with that portion of ours which recommends "the refusal of charters for single tracks," and says:—

"If this policy should be successful, it certainly would work admirably in destroying future competition to the existing lines. We do not believe that the project will work, but there are certain parties who are somewhat anxious that it shall."

Those certain parties cannot surely be accused of selfish views, at least none that we know. If such parties are known to the Times, it should name them—the finger of the press should be pointed at all parties whose selfish aims lead them to act against the public good. Our only reason for advancing the views spoken of, was to call attention to the evils of railway accidents, and to suggest one remedy; for we act upon the principle, that if we condemn one system, it is our duty to point out a better. There can be no doubt but single tracks answer very well for some districts, and to refuse charters for every future railroad unless it should be constructed with a double track, may prevent some competition to existing lines, but we say, safety before competition, when that competition involves danger—a saving of cents at an expense of life.

The article in our last number on this subject is worthy of attention, as it is from the pen of a practical American Engineer, who has been engaged on both French and English railroads, and who knows a great deal about the systems in Europe and at home.

A correspondent of the Times, an engineer, says that "past experience on railroads induces me to believe that accidents and death are more frequent on double than on single tracks." He produces a table of the accidents which have occurred on twelve single and three double track railroads, and makes out that accidents on the double tracks are as four to one of the single tracks; but he says that when the number of trains exceed twelve, the double track is preferable, "but in no case is there more safety with a double than a single track." His tables to us are of no value whatever, and his conclusions are just about as convincing. The accidents on railways should be calculated not according to the length, but the number of passengers carried over them. It would be very easy to prove that a single track was the safest if only 10,000 persons were carried over it in one year with but one accident, in comparison with a double track which carried 100,000, and had four accidents on it; but in the latter case the double track is more safe, the accidents on the single one being as 1 to 10; on the double one but 1 to 25. We have no object in view but the public good, and will heartily advocate any system or reform which sturdy facts prove to be the best and most safe to the travelling community.

American Inventions, Inventors, and the Scientific American.

There can be no better proof of the assertion, "the Scientific American is the Repertory of American Inventions," than the fact brought to our notice by the awards of the Mechanics' Institute Fair, Ill., held at Chicago, last October, Mr. McCormick got a gold medal for his Reaper, Mr. H. Adkins a silver one for a new Self-Raker, and Mr. Sanders a silver medal for his Seed Drill. All of these gentlemen have had engravings of the inventions presented in our columns, and we have had the pleasure of securing a patent for each of the latter gentlemen. These gentlemen have devoted their attention to improvements in the implements of agriculture—that art of arts, the mother of our country's greatness. There was a complaint, a few years ago, that agricultural inventions had been very few and far between, in comparison with other machines. We claim some credit for exciting the inventive qualities of our farmers, who will back us up when we say, that with reaping machines, grain drills, grain separators, &c., our columns afford abundant evidence of the inventive faculties of our agricultural population.

Steam Carriages for Plank Roads.

MESSRS. EDITORS—In your notice of the 3rd inst., of the Steam Carriage Co., you express a kind wish for its success, and admit that plank roads admit new ground of hope; and that improvements may have been made in the carriage, which afford further ground for hope; and still you doubt, and say that nothing but a practical test can settle the question. I fully agree with you as to the absolute settlement of the question; the general speculator will not feel sure until he has his first dividend in his pocket; the more practical undertaker will not venture until he sees *one* carriage actually running, with a good load, and with little fuel; and even the scientific man, whose business it is to ascertain, beforehand, what the result will be, will not, and from his mental habit cannot, be satisfied without the application of the dynamometer, the scales, and all the means of determining the force and the resistance he has to deal with.

You admit that steam carriages have run on common roads at 10 miles per hour; but they did not pay in competition with horses. There were, in some cases, other reasons than the defects of the carriages for their not paying. Gurney, in his testimony before the Committee of the Commons, says that they charged his carriage from £2 to £3 8s. at each toll gate; and they spread broken stone, to the depth of eighteen inches, upon the road, at the foot of a hill, for the express purpose of breaking him down—and they succeeded; and they annoyed him with prosecutions. All this violent opposition arose from the fear that he would succeed and injure the market for horse-feed, and lessen the rent of land. Moreover, undue wages were paid—each of Gurney's carriages had two men, at two guineas each per week, paid by Gurney, while the men upon the horse-coaches, I was informed in England, are paid by presents from the passengers, and often pay considerable sums for their places. If Gurney had succeeded, instead of paying four guineas per week for his two men, he might have received one or two from them. But we believe that one man, at one pound per week, could have managed a carriage, if it had been constructed with our improvements.

Hancock, and some others, had three men upon each carriage. Still, I am told by Hancock's machinist, his carriages earned enough to pay for themselves, and even to pay for new experiments, which did not result in real improvements.

But the failure was not signal and decided; the Select Committee of the House of Commons reported "that they will prove a speedier and cheaper mode of conveyance than carriages drawn by horses, and they will cause less wear of roads." And I may add, that the rush of capital into railroads, many of which paid very small dividends, was another cause of failure, which will have less effect in this country, where the railroads, instead of being opposed to them, will require them as feeders.

This general reasoning is of course vague, and can at best only neutralize objections, and leave the question in doubt. What we want is, some exact and authentic data; and these I presume, you can furnish to some extent. I will then ask—1st. What is the force of traction required upon the roads upon which you have seen steam carriages working? 2nd. What weight of boiler, machinery, wheels, and other parts had these carriages? 3rd. Did they work expansively—and to what extent? Could they vary the cut-off easily while running? 4th. Was the workmanship as good and as cheap as it can now be done? 5th. If a carriage, with a given load, would run ten miles per hour on the roads you saw, how fast would it run on plank roads, and how much would it cost to get the same speed with horses?

In conclusion, I will say one word about your privilege, as in the case of the Annihilator, to "make a note of the matter." Do not, from kindness to me, or consideration for the difficulties in my way, withhold one word of truth from your subscribers, who have a right to claim from you a clear exposure of every fallacy, a stern rebuke of every imposture, as well as a fostering care of every honest and reasonable effort to promote inventions. It is the indulgence—under the name of fair play—shown to the million visionary schemes, that allows them to grow into costly practical failures, and thus to shake all faith in schemes; and this I now find to my cost, for several persons, who have taken stock in Sawyer & Gwynne's "new power," say it is not worth while to engage in any new application of steam—and they wait for the developement of this new progeny of indulged dreamers and indulgent newspapers, before they will attend to locomotion by steam or even by magnetism.

Yours respectfully, J. K. FISHER.
Sec'y Am. Steam Carriage Co.

[We did not give any reasons for the opinions we expressed; we claim to have a perfect right to express an opinion, at all times, without entering fully into the reasons, upon which such an opinion is based. All our subscribers do not claim by right a clear exposure of every fallacy, for it cannot be expected that we, or any man can do this. They have a right to claim from us "a fostering care of every honest and reasonable effort to promote inventions," and we are guided by these views. We endeavor to rebuke every imposition—sham invention—but we would be sorry to use such an expression towards Mr. Fisher's improvements; neither have we said that it is a fallacy. But since we have been asked for reasons respecting our opinion, we will give some, irrespective of the catechetical order of the foregoing questions; an answer to them would not perhaps help any person to come to our conclusions, nor to come to contrary ones. We have rode in, and ran many times with steam carriages on common roads, and came near being blown up once along with an engineer, on one of them. The road on which they were used for some time, was seven miles long, two of which were paved as smooth as the Russ pavement in Broadway. It was a macadamised road, with some gentle undulations; it was the public thoroughfare between two cities, one of 200,000 and the other of 70,000 inhabitants. It was in the summer of 1833; the road was in good condition—hard and dry—and every thing was favorable for the steam carriages. There were two of them, and they ran in opposition to a regular line of stages; they were Gordon's improvements on that of Gurney. We were careful in looking after and inquiring about them. There was one toll-gate, and we never heard they were charged higher fares than the stages; the public wished them well, and they did not meet with the opposition spoken of in Mr. Fisher's letter. They did not make such regular trips as the stages. The workmanship of all their parts was good, but they were necessarily light, and on one occasion the boiler of one of them exploded and killed three persons. Previous to that event they did not pay, although they might have done so, for the public was favorably disposed towards them. They carried eight passengers at one shilling each (22 cents) for 7 miles. And when we speak of traction—a very indefinite term by some engineers—we have only to say that the stages with two horses made as good time, and sometimes better, side by side, carrying as many passengers. The horses have this advantage, their own weight is not added to their draught—this must always be done in the case of a steam carriage: it has to draw its engine, boiler, and fuel, and there must be extra room for all these. In Morin's experiments, on the proportionate resistance to the force of draught to the total load with carts, having large wheels, the dry, smooth McAdam road is as 1 to 75; on an oaken platform, as 1 to 70. It is stated by some of our engineers, that the resistance on our plank roads is as 1 to 80, and by others as 1 to 60, while others, again, state that a horse can draw three times more upon them than upon a McAdam road. This may be, but there is just as much difference between one McAdam road and another, as there is between a cobble-stone and a Russ pavement. The Report of the House of Commons was a very favorable one, in fact rather too favorable, and yet it is stated in it, that the weight drawn at 10 miles an hour, by Gurney's carriage, never exceeded, to any extent, the weight of the drawing carriage.

The rush to fund in the railway system did not take place for seven years after Gurney's experiments. Horse stages have this advantage, if a wheel or any other part breaks, the horses can be attached to another stage; a steam carriage, engine, and all, would have to be laid up; the expense in the one case is great, while in the other both convenience and economy are in favor of the stages.

Could a steam carriage carry passengers at the rate of two cents per mile? At the present moment stages run in opposition to a railroad, between Albany and Troy, on a McAdam road, and in another part of the State on a plank road, for two cents per mile. The wear and tear of steam carriages on plank or common roads, will be found to be very great. The expense of running stages in our country, leaving the tolls entirely out of the question, is not over half as much as they were in England in Gurney's day. We would like to see the steam carriages tried on our plank roads, many of which we have travelled on, but not one of which, in our opinion, is three per cent., if any, more favorable than the McAdam road on which we saw the experiments made with the steam carriages. As a question of economy, our opinion has been expressed already; it is different from that of some gentlemen whose opinions we respect, and others whose opinions are of but little worth. We hold our plank road system to be, in contradistinction to our railway system, one of economy to our rural, not our commercial population; and it is a system economical in principle, because it avails itself of the existing animal power belonging to those who must and do use such roads almost exclusively.

We could say a great deal more on this subject, but we have said enough upon it for the present.

Design for the Great Exhibition Building at New York.

A design, by Sir Joseph Paxton, for the intended Exhibition of the Industry of all Nations at New York, has been on view in London. The plan is upon a similar principle to that of the Crystal Palace in Hyde Park, and the length of the building is intended to be six hundred feet, and the breadth two hundred feet. There are two entrances, one at each end; and the construction of the doorway is somewhat similar to that of the transept entrance to the Exhibition in Hyde Park. The roof is to be of slate, in order to resist the weight of snow to which it may be exposed in the United States. The structure will be built upon arches, and the galleries will be supported by brackets, which will add materially to the strength of the building, and render it better adapted for permanent use than the "great original." The design is, on the whole, remarkable for its simplicity and practicability, and is another proof of Sir Joseph Paxton's great skill in this department of art.—[London paper.

[While we have coals in this country, it would be foolish to send to New Castle for them. We have seen the model of a Crystal Palace, by Mr. Bogardus, of this city, the well known American inventor, whose fame is world-wide, and whose iron buildings are unrivalled for strength, simplicity, and beauty. The design, we hope, will not be first applied to the dwarf Museum of Riddle, but to a World's Fair, to be held in our country not many years hence. The design is superior in all its details to the London Crystal Palace. It can be built ten miles long, and all the harmony of its parts preserved. The roof is entirely new in principle and plan, and it will never leak—no goods will be spoiled by passing showers, and to show how much prudent utility and calculating forethought there is in the plan, after it has served for a crystal palace, it can be taken down and made into a number of iron buildings without alteration, one of which may be put up in every separate State of the Union. It is so planned that none of the braces and binders, which so disfigured the interior of Paxton's great work, will be required; it will be simple, yet beautiful and grand—a design original and unique, one worthy of our country—eminently American, yet cosmopolite enough to cover the industrial products of all nations, and to command the admiration of the inhabitants of all lands. The American who would import a Crystal Palace should be transported.

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LIST OF PATENT CLAIMS

Issued from the United States Patent Office

FOR THE WEEK ENDING JANUARY 6, 1852.

VENTILATING RAILROAD CARS.—By N. S. Barnum & Lewellyn Whitney, of New Haven, Ct.: We claim the employment of the shaft, sliding boxes, and the springs, the whole operating in combination with the two pulleys, in the manner set forth.

CARRIAGE HUBS—By S. S. Barry, of Brownhelm, Ohio: I claim the combination of the conical bearing, the female centre or step, the thimble, rollers, and flange, arranged in the manner as described.

CONSTRUCTION OF BRIDGES—By Wendel Bollman, of Baltimore, Md.: I claim the combination of the tension rods, connecting the foot of each strut with each end of the stretcher, by which an independent support is given to the strut, carried back directly to the abutment, while, at the same time, no lateral force or strain is brought upon the abutment, as set forth.

COVERING CHEESES—By Upson Bushnell, of Gustavus, Ohio: I claim the spring cylinder with cleats, and open at the side, in combination with the framed stool with a circular opening, to admit and hold the cylinder within the sack while the cheese shall be passed through, all as described and for the purposes stated.

LOCK FOR CARRIAGE CURTAINS—By George Cook, of New Haven, Ct.: I claim constructing or manufacturing coach curtain locks, each consisting of a polygonal knob and an eyelet, having a polygonal central aperture of corresponding form and size, so that at certain relative positions, the knob head will pass freely through the eyelet, while in other relative positions the knob cannot pass through the eyelet, on account of the prominence of its angles.

I also claim attaching the knobs and eyelets to the articles which are to be thereby connected in such relative positions, that the knob head cannot be made to pass through the eyelet, either for the purpose of connecting or disconnecting, unless the evelet or knob is turned from its ordinary and proper position, both the knob and eyelet being constructed in the manner and for the purpose described.

MACHINE FOR TURNING UP THE EDGES OF SHEET METAL DISCS—By J. F. Flanders, of Newburyport, Mass. (assignor to F. Roys & Edward Wilcox, of Berlin, Ct.): I claim the employment of the spherical segmental bending roller, in connection with the conic frustum roller, to operate together, and so as to enable me to either turn down the flanch at a right, acute, or obtuse angle, all essentially as specified, and at the same time dispense with the necessity of having several sets of holders or gripers, to bend the tin plate against, as heretofore practiced.

CLOVER HARVESTER—By Mahlon Garretson, of Bermudian, Pa.: I claim the latteral projections, whose ends are fitted into the mortises or recesses in the shanks of the cutters, and whose upper front edges are made sharp, said projections serving the two-fold purpose of interlocking with the contiguous cutters, and acting as cutters themselves, as described, for severing the heads from the stalk.

STEAM AND WATER GAUGE—By Wm. C. Grimes, of Spring Garden, Pa.; ante-dated ouly 6. 1851: I claim the combination of the elevated glass syphon, containing a portion of air above, with the metallic tubes containing water below, arranged with respect to each other and the index, as described, for the purpose of showing or indicating the height of the water, and also the pressure of the steam in steam boilers, at an elevation above. or at the desired distance therefrom.

CAMPHENE LAMPS—By R. V. De Guinon, of Williamsburgh, N. Y.: I claim constructing lamps with a lower chamber, or equivalent receptacle thereto, such chamber or receptacle being connected with the reservoir near its top by a tube or passage, or other similar communication, substantially as set forth.

RAILROAD CHAIRS—By F. P. R. Hayden, of Columbus, Ohio: I claim rolling iron plates for railroad chairs upon rollers, so constructed that the portions intended to form the lips of the chair shall have a greater thickness than the rest of the plate, substantially as set forth.

IRON RAILINGS—By George Hess (assignor to Sylvanus Shimer), of Easton, Pa.: I claim the top rail with its notches and end hooks, the lower rail with its notches, end hooks, and groove; the palings with their notches, hooks, and Ts, the posts with their openings for the ends of the rails, and the key bar, by which the rails, posts, and palings are firmly fastened together, the whole constructed and arranged substantially as described.

DAGUERREOTYPE PICTURES—By H. E. Insley, of New York City: I claim the contracted opening to the mercury bath, and the seperating or raising the plate from the contractor during the operation of mercurializing; thus graduating the mercury upon the plate, producing the various tints, and gradually blending the outer edges of the gauge

WOOL PICKING MACHINES—By Edward Kellogg, of New Hartford, Ct: I claim the application and use of the comb plate to the upper and forward edge of the shell, when combined with the compound shell, to hold the comb plate, as described, the several parts thereof being combined for the purpose aforesaid. And I claim the small recess just below the upper edge of the shell, for the purpose described.

SHOVELS—By Hiram Kimball, of Worcester, Mass.: I claim, first, the attachment of malleable iron, or other metal, consisting of the lip, the flange, and the socket, and the mode of fastening the same to the blade, as described.

Second, the mode of fastening the lower end of the stock of the handle, by means of a socket and single strap, with the ends deflected upwards, on the front and back side of the stock, and thus connecting the handle with the blade of the shovel.

Third, the construction of the upper end of the handle, consisting of the socket, the ribs, the cylinder and the rivet, and the mode of connecting the same with the upper end of the stock, by means of the socket, substantially as set forth.

FELTING CLOTH—By Jos. Weight, of Lawrence, Mass. (assignor to S. Lawrence, of Boston, Mass.): Patented in England, Oct. 7, 1841—I claim the felting of wool, or other fibrous materials, upon a mover or netted fabric, substantially as set forth.

I also claim the use of one or more moving platens, having a reciprocating rectilinear motion in the direction of the length of the cloth to be made, over one or more stationary platens, in combination with the endless cloth bands, operated substantially as described, for carrying forward and regulating the motion of the material, while under the action of the said platens, substantially as set forth.

BREECH-LOADING FIRE-ARMS—By R. S. Lawrence, of Windsor, Vt.: I claim mounting the barrel on a spindle attached to or projecting from the breech-piece, so that the band can be turned thereon to carry the bore to the side of the breech, for the insertion of a cartridge, and back to close the bore against the breech-piece, substantially as described; but this I only claim in combination with the stationary breech-piece, provided with a cutting edge at the side, to cut off the rear end of the cartridge, and with a projectional top, extending over the barrel and around transversely, to receive a lip from the barrels to bind the barrel to the breech-piece, to resist the force of the discharge, all as described.

FEEDING ROLLERS IN STRAW CUTTERS—Nathl. Nuckolls, of Columbus, Ga.: I claim the enlargement of the knife grooves, on the feeding cylinder, in the manner set forth.

BLEACHING IVORY—By Ulysses Pratt, of Deep River, Ct.; ante-dated July 6, 1851: I do not claim the bleaching of ivory upon a frame exposed to the rays of the sun passing through glass placed above the same; but I claim the improvement in the process of bleaching ivory, as set forth, that is to say, the raising up of one edge of the piece of ivory above the plane of the frame that supports it, and sustaining it in its place in the manner described.

PEN AND PENCIL CASES—By J. H. Rauch, of New York City: I claim the collar encompassing and sliding freely on the pencil tube, said collar having a slot or recess cut through it, as described, through which the spur of the pencil slide may pass, by which arrangement either the pencil slide or pen holder may be operated, without interfering with each other, the collar being prevented from turning on the pencil tube by means of the spur working in the slot in the sliding tube, and also by which arrangement I combine the extension case with the slide case for both pen and pencil.

GOLD PENS—By A. W. Rapp, of Philadelphia, Pa.: I claim reducing or thinning the sides of the pen between the shoulder and split, whereby the advantages stated are fully attained, and the gold pen made to possess the qualities of the quill pen.

MECHANICAL GOLD BEATER—By R. B. Ruggles & L. W. Serrell (assignors to R. B. Ruggles), of New York City: We do not intend to confine or limit ourselves to the application of these means to beating lamina or leaves of metal, but to use this machine to beat any article to which it may be applicable.

We do not claim the hammer or the means of moving or actuating it, neither do we claim the use of cams to move the mould.

We claim, first, the arrangement and application of the vibrating fork, to take a definite amount of motion from the vibrating part of the hammer, for the purposes described.

Second, we claim lifting the mould, or its equivalent, from the anvil, and simultaneously or subsequently, turning the same, by competent mechanical means, substantially such as described, or their equivalents, so that it is replaced with the side that was previously on the anvil, exposed to the blows of the hammer.

Third, we claim the arm, latch, levers (two), chain, and crank, or their equivalents, in combination with a weighted arm or its equivalent, whereby a sudden partial rotation is given to the shaft, and then the lever is returned behind the latch, for the purpose as described.

Fourth, we claim, in combination, the lever, latch, cranks, frame, and links, or their equivalent, is lifted from the anvil, turned, and replaced, as described.

Fifth, we claim the application of the rollers (four) or other suitable mechanical means, set and moving at right angles with each other, and to the centre of the cam shaft, to take and communicate the motion given by a properly formed groove, or bead, in or on the face of the cam, to the mould, so as to place it in the proper position to receive the blows of the hammer, to beat each successive quarter of the mould, as described.

Sixth, we claim moving the mould or its equivalent, over areas of different size, by means of the same cam, through the agency of mechanical contrivances, substantially such as described. applied to the devices which transmit motion from the cam to the mould.

Seventh, we claim the arrangement of the slides, rollers, forks, with the crank and levers, to communicate the motion given by the cam to the rollers, to the mould, through its frame, substantially as described.

Eighth, we claim the adjustable fulcrum, and slides in combination with the levers, for the purposes specified.

Ninth, we claim the parallel motion bars and slotted bars, in combination with the slots, in the frame, whereby the mould and frame has a free motion, at the same time that it is kept parallel with the sides of the anvil, or the slotted bar.

Tenth, we claim the arrangement of the forked springs, and pins, or their equivalents, as applied to the purpose of returning the mould to its central position, when commencing to beat each quarter of the mould, as described.

TRUCKS FOR LOCOMOTIVES—By J. L. White of Corning, N. Y.: I claim the joint connecting the truck with the boiler, consisting of a long semi-cylindrical bearing. and an adjustable eccentric for putting the truck in line, substantially in the manner set forth.

CAR WHEELS—By H. W. Woodruff, of Watertown, N. Y.: I claim casting a railroad car wheel with a chilled rim and solid undivided hub, connected by means of a plate, which is single and solid at certain parts, so that imaginary radial lines, from hub to rim, will pass through the said solid parts and double and bend in opposite directions, between the single and solid parts, and wholly or partially from hub to rim, the whole constituting one casting substantially as specified.

VENTILATING WINDOWS FOR RAILROAD CARS—By Henry M. Paine, of Worcester, Mass.: I am aware that repeated attempts have been made to prevent the sparks from entering the cars by deflecting boards or slats, but they have been outside and independent of the windows; they could not be adjusted by the passengers themselves, they are an additional expense and cannot effectually shield off the dust and sparks, unless they should cover the window, so as to obstruct the view therefrom; therefore I wish it to be understood as not claiming a deflector; but I claim the construction and arrangement of the windows of a car or carriage, in the manner set forth, by causing the parts of the window to stand at an angle outward, when closed, and opening inward to a line with the inside of the car, as described, whereby I insure ventilation without the annoyance of dust, by means of the window alone, without the addition of other deflectors.

[We have expressed ourselves freely about Mr. Paine's Gas inventions; this one is a mechanical improvement and a good invention; it has been applied to a railroad car on the N. Y. and New Haven Railroad, which we have examined and think well of.—ED. Sci. Am.]

DESIGNS

STOVES—By J. G. Abbott & A. Lawrence of Philadelphia; ante-dated Dec. 11, 1851; two designs.

By Sanford Burnam, of Waterford, N. Y.

By Wm. Savery, of New York City.

By J. M. Conklin, of Peekskill, N. Y. (assignor to W. D. & F. Vredenburg, of Sing Sing, N. Y.)

SPOONS—By H. Hebbard & J. Polhemus, of New York City.

[We made application for six of the above patents, and are pleased to see that our friends have obtained a legal certificate of their inalienable rights. Many, we suppose, are not so fortunate, although entitled, we believe, to them. It is to be hoped that a right spirit will go on and prevail in the Patent Office. There are some valuable inventions in the above list: Grimes' Steam Gauge was illustrated in our last Volume.

The Arctic Regions.

Dr. Kane, who accompanied the Grinnel Arctic Squadron, in search of Sir John Franklin, has been delivering some very interesting lectures before the Smithsonian Institute in Washington. The "National Intelligencer" gives an abstract of his lectures.

"At one time the vessels were about to enter Baffin's Bay, fast in a great field of solid ice, when suddeniy this was rent in chasms, which rapidly opened into what were characterized by Dr. Kane as "dark rivers," nearly half as wide as the Potomac. On the 13th of January of last year these began to close with frightful clamor and disruption. The brig was bodily lifted up seven feet, and an advancing mound ot ice threatened to overwhelm her, when by some miraculous agency its course was arrested. The subsequent portions of the lecture were full of novelty; they related to some of the physical phenomena of this wonderful region. The first of these was:—

THE POLAR CIRCLE.—This, with its gradual and insiduous approach, was graphically depicted. At the appalling temperatures of 40° and 50°, or 70° to 80° below the freezing point, cold became sensible in its effects as heat; indeed, between the positive effects of the very high and the negative of the very low scale, it was impossible to distinguish by sensation. Upon going out into the open air the face became encrusted with an icy rind, and the lips were glued together by the cementing aid of the beard and moustache.—The trigger of a gun blistered the finger, and a jack-knife in the pantaloons pocket caused you to jump as with a sudden scald. During the long darkness, when they attempted to beguile the winter hours with theatricals, an unfortunate Thespian dropped the pantomimic flat-iron as though receiving a sudden burn. Indeed next day a row of blisters had given the evidence of the truth that, in temperatures as in everything else, extremes meet.

THE POLAR NIGHT.—With the cold came darkness. The long night stole gradually upon our voyagers, and at last the clear heavens shone out perpetually with unchanging stars. The pole star was so near overhead as to appear in the absolute zenith, and around it the "great vault of heaven revolved with perpetual twinkle." This portion of the lecture was listened to with breathless attention. At last, however, the night passed away, and, almost by an immediate transition, day came upon them. Dr. Kane said that this short period of alternation, giving them as it did the familiar day and night of home, was full of painful associations.

At this time many pecaliar phenomena were noticed. Among these stood prominently

PARASELINÆ AND LUNAR HALOS.—The moon was observed surrounded by two concentric circles, each intersected by luminous bands passing through her disc. Dr. Kane has seen at one time six imitative moon aping, though feebly, the great satelite.

THE AURORA.—This was not the display, either of color, or illumination, or movement, which is seen in more southern latitudes.—Dr. Kane mentioned that he had observed the auroral arcs directly overhead, nearly coincident with the magnetic meridian. They were then north of the magnetic pole of our earth, and the south polar direction was read by the compass of north. In other words, their magnetic variation was 180°.

PARHELIA.—With the daylight came the parahelian, or mock suns. These, like the paraselinæ, or mock moons, were full of variety. The lecturer very properly observed that it was a sort of profanation to attempt to describe a sky traversed with rainbows and glittering with imitative suns.

REFRACTION.—Last of these most interesting displays came "refraction;" that form of it so well known to us under the "mirage." The marvels of this wonderful illusion, although sustained by the united experience of all Arctic voyagers, surpass the conceptions of the reality. Saracenic cities glittered in the "purples of the low sunlight;" ocean-steamers fumed in the vibrating distance. All these were described with poetic yet truthful force of detail. But, leaving all this, Dr. Kane at last escaped from the great pack-ice by Baffin's Bay. Once more the vessel dashed the free water from her bows. Here a sincere but expressive eulogium of his commander and messmates came naturally from Dr. Kane. Lieut. De Haven had determined to renew the search to the northward, and his officers, to a man, sustained him.

THE SECOND SEASON.—Once more, then, the battered little vessels turned their bows to the North, but their path was not a free one. Icebergs hemmed them in, and soon they were fast bound by midsummer ice. Here, but for the exercises of unceasing watchfulness, they were upon the very verge of being made prisoners for a second winter. But Providence otherwise willed it, and by incalculable exertions they escaped. In the concluding sentences of his lecture, Dr. Kane reviewed their operations, stating that they had fallen upon the track of Franklin, and been imprisoned a winter at the North almost directly upon his track; but circumstances beyond their control called them from the seat of search.

For the Scientific American.

The Scientific American---Its Science.

As your paper is mainly devoted to the improvement and preservation of machinery, the human machinery deserves special care. Two weeks ago, my friend, G. R. Hartley, skinned his shin about the size of a half dime by a box falling against it in his store, and as is customary where tallow candles are used, he immediately plastered it over with the warm tallow from a lighted candle. The next morning his leg was sorely inflamed around the slight wound as large as a hand, much swollen, and he was unable to walk, but by the application of bread and milk poultices for a week the inflammation is now nearly removed. He is a healthy, temperate, and careful man, and expressed to me his astonishment at the magnitude of his wound from so slight a cause which may even yet cost him his leg if not his life. I removed his astonishment by informing him that now-a-days tallow candles had in their composition, alum, or vitriol, or arsenic.

I poisoned my lips some time ago by the same application (before I took the Scientific American), but since I read it as carefully as my Bible, I have learned the cause ot these things, and my object in writing to you is, to be instrumental in saving many ot your twenty thousand subscribers from the calamity that may befall them by using candle grease for the lubrication for every little sore.

JOHN WISE.

Lancaster, Pa., Jan. 6th, 1852.

Reform in the Patent Laws.

A preliminary meeting of inventors and gentlemen interested in a reform of the Patent Laws, was held in the office of the Scientific American on last Friday evening. It was a meeting preparatory to general organization of inventors and their friends, in every village and city in the Union. When the plan is fully matured, we will publish the objects which they intend to accomplish, objects which we are sure will meet the approbation of all our citizens.

In various parts of California, it is stated, saccharine matter, of delicious flavor, is found on the leaves of various kinds of trees, deposited in many cases in a candied form, and in drops resembling and tasting like honey.

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TO CORRESPONDENTS.

J. G., of N. Y.—"Babbet's Metal" is composed of copper, tin, and antimony.

J. J. A., of N. Y.—Your documents came safely to hand, and are amply explicit for our purpose. Your case will receive early attention.

E. S. H., of N. Y.—Your rotary engine is like a number of others which we have seen, and a conical boiler has been employed, but we have not seen an egg one like yours; but depend upon it, a cast-iron boiler will not answer for high pressure steam, unless you make it too heavy for use. The rotary engine would be much less favorable than a cylindrical one.

H. Van A., of Ohio—It is true that a magnetic telegraph has been in operation, and without batteries, but then it was only for a short distance; the improvement would be a good one, but for a long line where is its intensity to come from? This, according to present science, is limited.

N. E. G., of Miss.—If you examine page 225, Vol. 3, Sci. Am., you will find the same method of insulating telegraph wires as you propose, illustrated, excepting the kind of tubes, lead being the ones there described, yours iron. The lead tubes would be the cheapest and best; the objections are expense and more trouble to repair.

N. S. & A. C., of R. I.—We have seen pumps constructed as you describe, but we cannot inform you where one might be obtained.

W. C. H., of Ohio—We can furnish you with the first numbers of Vol. 6, up to April 16th, for $1,25.

T. S. T., of Ala.—On page 364, Vol. 5, Sci. Am., you will find an engraving of a machine for adding, which was patented in Feb. 1850.

E. B. C., of Vt.—Your wheel is not new, you will find it described in Vol. 5, Sci. Am. It will not work—do not spend money on it.

R. S. L., of Ohio—Get an engraving of your invention published in our columns, it will do you more good than you are aware of.

C. H., of S. C.—We will try and give you the information desired: the bricks steeped in strong salt brine, then submitted to an intense heat, will be glazed on the surface, for this is the way some pottery ware is glazed.

H. M., of Ohio—We have never seen the same plan for a propeller, but it is our opinion that it is not as good as Perkins' and some others in Vol. 5 Sci. Am.

J. W. P., of Ga.—We cannot see how the pressure of the atmosphere could flatten the poles, for although it is denser there, it cannot extend so high. The pressure upon the surface of the earth is the zame there nearly as here, and the whole pressure—15 lbs. on the square inch—has but little effect in altering the shape of our globe.

W. McB., of Ohio—We believe there is patentable novelty in your contrivance of a neck yoke.

J. McD., of Pittsburg—Yours of the 31st ult. came safe to hand: we have answered all your former letters, and will proceed with this one immediately.

S. S. B., of Ohio—We have not heard anything more of the "fusible metal" since the time referred to.

J. S. S., of Phila.—The answer to "Anthrax," in our last, will apply to your communication of the 4th.

E. C. of N. Y.—We could not institute a claim for a patent for your plan. There are falls on which a complete flight of wheels like trap stairs are employed. There are overshot wheels 50 feet in diameter; but we have never seen wheels set in the same pit as you propose.

W. P., of Boston.—We do not see any patentable novelty in the tube, a similar plan was shown us several months since. We cannot advise you to apply.

J. M., of N. Y.—The engraving of your tailor's measure will appear in our next number. $12 received.

There are several letters awaiting an answer. We shall endeavor to clear our shelves with the next issue—in the mean time we hope our good friends who have an axe to grind in our establishment will wait patiently until their turn comes round.

Some of our correspondents possess the happy faculty of condensing to a very nice point, others crawl all round sheets of paper with pen and pencil. It is understood, however, that letters written in pencil are usually thrust behind the scenes.

We have had a few communications, such as one on telegraph, and another on water wheels, lying past for some time. We will soon be able to give them attention.

Money received on account of Patent Office business for the week ending January 10.

C. A. M., of N. Y., $17; C. P. L. of Ga., $10; A. S., of Pa., $20; C. R. M. W., of N. Y., $55; J. S. P., of N. Y., $99, 73; E. M. & Co., of Pa, $60; W. B. O., of Ct., $20; H. L. H., of Vt., $55; H. & O. of N. J., $10; J. N. A., of Ct., $30; N. A., of Pa., $55; E. P. R., of L. I., $50; G. S., of L. I., $30; R. C., of Ct., $20; T. H. T., of N. Y., $10; C. F. C., of N. Y., $36; P. M. & Co., of Pa., $10.

Specifications and drawings belonging to parties with the following initials have been forwarded to the Patent Office during the week ending Jan. 10:—

W. M., of Mo; A. G. B., of Mass., A. S., of Pa.; P. D., of Pa.; W. B. D., of Ct.; B. D. S. of Va.; B. & S of Ct.

Patent Claims.

Persons desiring the claims of any invention which has been patented within fourteen years, can obtain a copy by addressing a letter to this office;—stating the name of the patentee, and enclosing one dollar as fee for copying

To Patentees.

"Letters Patent," belonging to the following named inventors, remain at our office uncalled for We would be obliged to those parties who can conveniently receive parcels by express, to order their documents home, as they will be less likely to get mislaid by them than by being allowed to remain at this office, where so many documents, drawings, etc., are daily being received:—

Elijah Whiten; Wm. Post; S D. Hopkins; A. W. McKinney; James Dane; Henry Harrington; Jehiel Butts; Daniel Drawbaugh; F. A Stevens.

An Important Paragraph.

Whenever our friends order numbers they have missed—we always send them if we have them on hand. We make this statement to save time and trouble, to which we are subjected in replying when the numbers called for cannot be supplied.

The Post Office Laws do not allow publishers to enclose receipts; when the paper comes regular subscribers may consider their money as received.

Subscribers ordering books or pamphlets are particularly requested to remit sufficient to pay postage.

Back Numbers and Volumes.

In reply to many interrogatories as to what back numbers and volumes of the Scientific American can be furnished, we make the following statement:

Of Volumes 1, 2 and 3—none.

Of Volume 4, about 20 Nos.; price 50 cts.

Of Volume 5, all but 4 numbers, price, in sheets, $1,—complete sets, bound, $2,75.

Of Volume 6, all; price in sheets, $2; bound, $2,75.

Of Vol. 7, all back numbers at subscription price.

New Edition of the Patent Laws.

We have just received another edition of the American Patent Laws, which was delayed until after the adjournment of the last Congress, on account of an expected modification in them. The pamphlet contains not only the laws but all information touching the rules and regulation of the Patent Office. We shall continue to furnish them for 12 1-2 cts. per copy

ADVERTISEMENTS.

Terms of Advertising.

One square of 8 lines, 50 cents for each insertion.
" 12 lines, 75 cts., " "
" 16 lines, $1,00 " "

Advertisements should not exceed 16 lines, and cuts cannot be inserted in connection with them at any price.

American and Foreign Patent Agency

IMPORTANT TO INVENTORS.—The undersigned having for several years been extensively engaged in procuring Letters Patent for new mechanical and chemical inventions, offer their services to inventors upon the most reasonable terms. All business entrusted to their charge is strictly confidential. Private consultations are held with inventors at their office from 9 A. M., until 4 P. M. Inventors, however, need not incur the expense of attending in person, as the preliminaries can all be arranged by letter. Models can be sent with safety by express or any other convenient medium. They should not be over 1 foot square in size, if possible.

Having Agents located in the chief cities of Europe, our facilities for obtaining Foreign Patents are unequalled. This branch of our business receives the especial attention of one of the members of the firm, who is prepared to advise with inventors and manufacturers at all times, relating to Foreign Patents.

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128 Fulton street, New York.

LATHES FOR BROOM HANDLES, Etc.—We continue to sell Alcott's Concentric Lathe, which is adapted to turning Windsor Chair Legs, Pillars, Rods and Rounds; Hoe Handles, Fork Handles and Broom Handles.

This Lathe is capable of turning under two inches diameter, with only the trouble of changing the dies and pattern to the size required. It will turn smooth over swells or depressions of 3-4 to the inch and work as smoothly as on a straight line—and does excellent work. Sold without frames for the low price of $25—boxed and shipped with directions for setting up. Address (post.paid) MUNN & CO.
At this Office.

FOR SALE—An Iron Foundry, with Patterns, Flasks, &c.; also engine and other lather, upright and horizontal drills, machinery, tools, &c. The foundry building is 63 by 34 ft., with a projection for cupola, and is well fitted for doing a large amount of business. There is also connected with the same a Blacksmith and Pattern Shop. Water power is used, and a large amount can be had at a reasonable rent. Persons wishing to engage in this profitable branch of business, will find it for their interest to call and examine the premises. Terms of payment made satisfactory. For particulars inquire of
SAML. DEMING.
Farmington, Ct., 1851. 184*

FOUNDRY TO LET.—It is well located in New York, and a large business can be done in it. Everything is ready to carry on business immediately, and will be leased on liberal terms. Address E. J. PORTER, No, 6 City Hall Place, N. Y. 1*

MORTISING MACHINE.—Dear Sirs: I received the Portable Mortising Machine about 3 weeks ago; I have used it, and am very well pleased with it. It is the best plan of a machine of the kind I have ever seen. W. R. McFARLAND.
Nashville, Tenn., 1851.
This machine is simple, durable, and effective, and is boxed and shipped for the low sum of $20.
MUNN & CO.

FRENCH BURR STONES—We can furnish an excellent run of Burr Stones, 4 1-2 feet, for $145, carefully put upon ship board. Apply to
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WANTED—To purchase, 10 or 12 ring and traveller Twist and Filling Frames, of 132 to 160 spindles each, new or second hand, in first rate order—also one pair of hand mules, of 500 to 600 spindles, each second-hand. Address DAVID TRAINER, Marcus Hook, Pa. 15 4*

POST'S PATENT SLIDING DOOR FRONTS—For Stores and Public Buildings; a new, cheap, and simple fixture for securing store fronts, which renders them fire and burglar proof, has been invented and patented by the subscriber, who is now prepared to sell rights. Messrs. Quarterman & Son, 114 John st., N. Y., are general agents. Address (post paid) Wm. POST, Architect, Flushing, L. I. 6 3m

BILLINGS PATENT BAND WRENCH, for Wagons and Carriages.—This article is fully described and illustrated by engravings in No. 7, Vol. 7, of the Scientific American. The Patent Band Wrench applies to wagons and carriages where the common or square nut is used. They are perfectly tight and prevent all dust and dirt from reaching the axle. The wheel is taken off by means of a small pocket key. A Silver Medal was awarded this article by the American Institute at their late Fair in this city. The Bands are manufactured by the Patent Band Wrench Co., located at Claremont, N. H. Smith Van Horn & Co. are the agents for this city. Orders addressed to them, as above, will meet with prompt attention. A. M. BILLINGS,
12tf General Agent for the Co.

THE EXCELSIOR Sand and Emery Papers. are offered as new and superior articles, being manufactured by an improved process; the paper is made from the best Manilla hemp, and consequently is very strong and lasting; the grit is of the sharpest and most enduring kind, and is firmly attached to the paper with a remarkable evenness of surface; their freeness from ridges, stripes, and other imperfections, recommend them to the notice of consumers. These papers have been used by many of our first mechanics, and are pronounced superior to all others. Every sheet is stamped Blanchard & Parsons, and warranted. Samples furnished at the office, No. 187 Water street (2nd story), New York.
14 6m* BLANCHARD & PARSONS.

TO MACHINISTS AND FOUNDRY MEN.—The Maryland Machine Manufacturing Company will positively sell at public aution, without reserve, all their Machinery, Tools, Foundry Fixtures, &c., at the Factory, Ellicott's Mills, near Baltimore, on Wednesday, Jan. 14, 1852. The list embraces a great variety of new and modern-built tools, in good order and but little used, among which are 20 Turning Engines of various sizes; two superior Iron Planing Machines, one being of very large capacity: one superior Gear Cutting Engine; one Slabbing Machine—with a large and complete assortment of other Tools. The sale will commence at 10 o'clock. Terms of sale—All sums under $100, cash; over $100 and under $500, four months; over $500, six months.
GEORGE POE, Agent, Ellicott's Mills.

WHITAKER'S PATENT CRADLE—This is an invaluable addition to the Nursery, and no family should be, nor will be, without one of them, after a short time. In practical value, this invention far surpasses every other attempt of the kind. The novel and attractive features of Whitaker's Cradle are, 1st, that it will impart a swinging or rocking motion, as preferred; 2nd, it is propelled by the combined weight of the cradle and child; 3rd, it is destitute of any noise whatever, the moving power being derived through a spring crank: 4th, it will continue to rock or swing, regardless of the shifting of the child from side to side of the cradle; 5th, it can at pleasure, be made to discourse music, which will continue as long as the cradle rocks, if allowed to do so; 6th, it possesses a regulator, with which it can be made to rock or swing fast or slow, as desired.—Union or State rights offered on accommodating terms. Address L. E WHITAKER, Greenville, Pitt Co., N. C. 16 3*

PATENT CAR AXLE LATHE—I am now manufacturing, and have for sale, the above lathes; weight, 5,500 pounds, price $600. I will furnish a man with each lathe, who will turn and finish axles for 50 cents each, if desired. I have also for sale my patent engine screw lathe, for turning and chucking tapers, cutting screws and all kinds of common job work, weight 1500 lbs., price $225. The above lathe warranted to give good satisfaction. J. D. WHITE, Hartford, Ct. 7 6m*

1851 TO 1856.—WOODWORTH'S PAtent Planing Machines.—Ninety-nine hundredths of all the planed lumber used in our large cities and towns continues to be dressed with Woodworth's Machine. Price of the machine from $150 to $760. For rights in the unoccupied towns and counties of New York and Northern Pennsylvania, apply to JOHN GIBSON, Planing Mills, Albany, N. Y. 9 10*

LOGAN VAIL & CO., No. 9 Gold street, New York, agents for George Vail & Co., Speedwell Iron Works, have constantly on hand Saw Mill and Grist Mill Irons, Press Screws, Bogardus' Horse-Powers, and will take orders of Machinery of any kind, of iron and brass; Portable Saw-mills and Steam Engines, Saw Gummers of approved and cheap kind, &c. Gearing, Shafting, large and small, cast or of wrought iron. 11tf

BALLOONS.—I am prepared to manufacture Hydrogen Balloons of from 1 pound to 50,000 lbs. ascending power to order. Balloons capable of carrying up one or two persons always on hand. The Balloons will be of the most perfect construction, so that any person can, with certainty and safety ascend with them. Instructions to insure success given to purchasers gratis. JOHN WISE, Lancaster, Pa. 9 10*

P. W. GATES'S PATENT DIES FOR CUTTING SCREWS—Patented May 8th, 1847.—This Die cuts Screws of any size, V or square thread, by once passing over the Iron. Also, Lead Screws for Lathes, Hoisting Screws, &c. All orders for Dies and Taps, with or without machines, will meet with prompt attention by addressing P. W. Gates, or Gates & McKnight, Chicago; Marshall, Bement & Colby, Philadelphia; Woodburn, Light & Co., Worcester, Mass. References—All the principal machine shops in New York, Philadelphia, and Boston. 13 6m*

ADIRONDAC American Cast Steel.—This steel has recently been greatly improved in uniformity, soundness, strength, and toughness. It is purely American, and will be sold as low as the imported; this improved quality is warranted superior to any other in market. Friends of home industry are requested to try this new and uniform steel.
QUINCY & DELAPIERE,
15 6* Warehouse 81 John st., N. Y

HAWKIN'S Stave Dressing Machine—Is now in operation in the city of Milwaukie, Wis., and will dress from 6 to 8000 staves per day, ready for the truss hoops, and at one operation. Rights for States and Counties, and also machines, for sale, apply to WM. HAWKINS, Patentee, Milwaukie, Wis. 15 20*

A. B. ELY, Counsellor at Law, 46 Washington st., Boston, will give particular attention to Patent Cases. Refers to Munn & Co., Scientific American. 13tf

SCRANTON & PARSHLEY, Tool Builders, New Haven, Conn., have on hand six 12 ft. slide lathes, 28 in. swing; also four 8 ft. do., 21 in. swing, with back and screw gearing, with all the fixtures; one 5 ft. power planer; 12 drill presses, 4 bolt cutting machines, 30 small slide rests; 5 back geared hand lathes, 21 in. swing; 15 do. not geared; 8 do. 17 in. swing on shears 5 1-2 feet; 25 ditto with and without shears, 13 in. swing; counter shafts, all hung if wanted suitable to the lathes. Scroll chucks on hand; also index plates for gear cutting. Cuts of the above can be had by addressing as above, post-paid. 9tf

BEARDSLEE'S PATENT PLANING MAchine, for Planing, Tonguing and Grooving Boards and Plank.—This recently patented machine is now in successful operation at the Machine shop and Foundry of Messrs. F. & T. Townsend, Albany N. Y.; where it can be seen. It produces work superior to any mode of planing before known. The number of plank or boards fed into it is the only limit to the amount it will plane. For rights to this machine apply to the patentee at the abovenamed foundry—or at his residence No. 764 Broadway; Albany. GEO. W. BEARDSLEE. 5tf

WATTS & BELCHER, Manufacturers of Steam Engines, Lathes, Planing Machines, Power Presses, and Mechanics' Tools of all descriptions. Orders respectfully solicited and punctually attended to. Washington Factory, Newark, N. J. 7 20*

PAINTS, &c. &c.—American Atomic Drier, Graining Colors, Anti-friction Paste, Gold Size, Zinc Drier, and Stove Polish.
QUARTERMAN & SON, 114 John st.,
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MACHINERY.—S. C. HILLS, No. 12 Platt-st. N. Y. dealer in Steam Engines, Boilers, Iron Planers, Lathes, Universal Chucks, Drills; Kase's, Von Schmidt's and other Pumps; Johnson's Shingle Machines; Woodworth's, Daniel's and Law's Planing machines; Dick's Presses, Punches and Shears; Morticing and Tennoning machines; Belting; machinery Beal's patent Cob and Corn mills; Burr mill and Grindstones; Lead and Iron Pipe &c. Letters to be noticed must be post-paid. 13 tf

WOODWORTH'S PLANING MACHINE—For sale, the right to use this justly celebrated labor-saving machine in the following States, viz., Pennsylvania west of the Allegheny Mountains, Virginia west of the Blue Ridge, Ohio, Indiana, Kentucky, Tennessee, Wisconsin, Iowa, Missouri, Arkansas, Texas, Louisiana, Florida, Alabama, and Mississippi. For particulars apply to the Proprietor, ELISHA BLOOMER, 208 Broadway. 17 12*

WOOD'S IMPROVED SHINGLE MACHINE—Patented January 8th 1850, is without doubt the most valuable improvement ever made in this branch of labor-saving machinery. It has been thoroughly tested upon all kinds of timber and so great was the favor with which this machine was held at the last Fair of the American Institute that an unbought premium was awarded to it in preference to any other on exhibition. Persons wishing for rights can address (post-paid) JAMES D. JOHNSON, New Haven, Ct.; or WM. WOOD, Westport; Ct., All letters will be promptly attended to. 37tf

LEONARD'S MACHINERY DEPOT, 109 Pearl-st. 60 Beaver N. Y.—The subscriber is constantly receiving and offers for sale a great variety of articles connected with the mechanical and manufacturing interest, viz.: Machinists' Tools—engines and hand lathes; iron planing and vertical drilling machines; cutting engines, slotting machines; bolt cutters; slide rests; universal chucks &c. Carpenters' Tools—mortising and tennoning machines; wood planing machines &c. Steam Engines and Boilers from 5 to 100 horse power. Mill Gearing—wrought iron shafting; brass and iron castings made to order. Cotton and Woolen machinery furnished from the best makers. Cotton Gins; hand and power presses. Leather Banding of all widths made in a superior manner; manufacturers' Findings of every description. P. A. LEONARD. 10tf

MANUFACTURE OF PATENT WIRE Ropes and Cables—for inclined planes, suspension bridges, standing rigging, mines, cranes, derick, tillers &c.; by JOHN A. ROEBLING; Civil Engineer—Trenton N. J. 47 1y*

RAILROAD CAR MANUFACTORY—TRACY & FALES, Grove Works, Hartford, Conn. Passage, Freight and all other descriptions of railroad Cars, as well as Locomotive Tenders, made to order promptly. The above is the largest Car Factory in the Union. In quality of material and in workmanship, beauty, and good taste, as well as strength and durability, we are determined our work shall not be surpassed. JOHN R. TRACY,
39tf. THOMAS J. FALES.

IRON FOUNDERS MATERIALS—viz.: fine ground and Bolted Sea Coal; Charcoal, Lehigh, Soapstone and Black Lead Facing. Iron and brass moulding sand; Fire Clay, Fire sand and Kaolin;—also English, Scotch and Welsh Fire Bricks—plain arch, circular and tower cupola—for sale by G. O. ROBERTSON Liberty place, between 57 and 59 Liberty-st. (near the Post Office) N. Y. 7 12*

McCORMICK'S PATENT REAPERS AND MOWERS.—1700 of these machines, for which the great Medal of the World's Fair was awarded, are being manufactured at Chicago, Ill, with the intention of supplying the South-eastern States for the next harvest The gold medal of the Chicago Institute was recently awarded for this Reaper and Mower, tested against two other mowers, in cutting prairie grass; and the first premium of the State Agricultural Societies of Wisconsin, Michigan and Pennsylvania, were also awarded at their late Fairs. Price $120 at Chicago, and $122 delivered at Philadelphia; terms otherwise accommodating. 9tf

PHOTOGRAPHY—A Treatise on the Chemical changes produced by Solar Radiation, and the production of pictures from Nature by the Daguerreotype, Calotype, and other Photographic processes—by Robert Hunt, Professor of Mechanical Science in the Museum of Practical Geology, author of "Researches on Light," "The Poetry of Science," etc.: with additions by the American Editor. The above is the title of a new and complete work upon the Daguerreotype and Photographic art: 12mo. 290 pp., containing 77 illustrations, with fine likenesses of Daguerre and Niepce. Bound in cloth, and forwarded by mail free of postage at the following rates—one copy, for any distance under 500 miles, $1,25; over 500 miles and under 1500, $1.38; any distance over 1500 miles and under 2500, $1,50. Post-Office stamps taken. Address (post-paid) S. D. HUMPHREY, Publishers, New York. 16 3*

VENTILATION.—Mr. Ruttan, of Coburg, Canada, is desirous of an opportunity to direct the erection (for ventilation) of a good dwelling or school house in the city of New York. For particulars inquire at the Scientific American Office. 15 10*

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SCIENTIFIC MUSEUM.

Velocity.

Velocity, in dynamics, is the ratio of the quantity of linear extension that has been passed over in a certain portion of time; or it is the ratio of the time that has been employed in moving along a determinate extension.

When a man ascends vertically, his velocity is reduced to about one half of his horizontal velocity, indicating that he acts against a double resistance; therefore, when a man ascending a ladder, carries a load, the maximum effect will take place when his ascending velocity is about one fourth of the velocity he can walk horizontally without a load.

A man of ordinary strength will not be able to walk, unloaded, at a quicker rate than 3½ miles an hour, if this exertion is to be continued for 10 hours every day. Indeed, those who examine the subject with a view to a fair average, will find this to be about the extreme velocity that can be continued, without injury, for any considerable time; therefore a man ought to move with half this velocity to produce a maximum effect; that is, at the rate of 1 3-4 mile an hour, which is about 2½ feet per second.

But this supposes the load to be the useful effect, whereas part of it must consist of the apparatus employed to carry it, or the friction of the intermediate machine, or other circumstances of a like nature. About one-fifth of the velocity may be considered equivalent, at an average, to the force lost in friction, &c., in all cases; in many it will exceed one-fifth. Hence the maximum of useful effect will take place when the velocity is 2 feet per second, or about 11 furlongs an hour continued for 10 hours each day.

Smeaton is said to have made numerous comparisons, from which he concluded that the mechanical power of a man is equivalent to 3,750 lbs. moving at the velocity of one foot per minute; and taking this average to be near the true one, as there is reason to conclude it is, we have

$$\frac{3750}{2\times 60}=31{\cdot}25 \text{ lbs.}$$

Therefore, we make the average mechanical power of a man 31·25 lbs. moving at the velocity of 2 feet per second, when the useful effect is the greatest possible; or half a cubic foot of water raised two feet per second; a very convenient expression for hydrodynamical inquiries.

If a man ascend a vertical ladder, according to a preceding remark, the velocity which corresponds to the maximum of useful effect will be 1 foot per second, and the load double that which he carries horizontally; consequently the average of useful effect is 62·5 lbs. raised one foot per second.

Masons' laborers ascend ladders with a load of about 80 lbs besides the hod; sometimes at the rate of one foot per second, but more frequently about 9 inches per second.

Ascending stairs is more trying to the muscles of the legs than ascending a ladder; and therefore the useful effect is less, till a person has become accustomed to this kind of labor; and it is also to be observed that the space moved over is increased, unnecessarily, except where the horizontal distance is part of the path over which the load is to be moved.

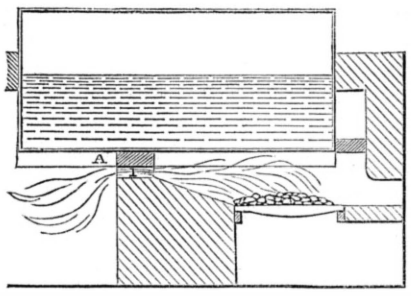
The force of a horse is, at an average, about equal to that of six men, according to various estimates; and the rate of travelling about the same, perhaps rather less than that of a man, when his exertion is continued for 8 hours; consequently the velocity corresponding to the maximum effect will be about 2½ feet per second. Whence, the average mechanical power of a horse may be estimated at 187½ lbs. moving with a velocity of 2½ feet per second, or 3 cubic feet of water raised 2½ feet per second; the day's work being 8 hours.

Interesting to Scientific Authors.

A very interesting scientific case was recently tried before the U. S. Circuit Court, at Boston. It appears that during the summer of 1848, an arrangement was entered into between Edward Desor, of Neufchatel, a geologist, and Lieut. C. H. Davis, of Cambridge, to produce a joint work on the geological effects of the tidal currents of the ocean.—Lieut. Davis afterwards declined to proceed in the new enterprise; hence an action to recover the value of labor and time devoted to the work was instituted by M. Desor, and the amount claimed was $2,000. The defence set up was, there was one contract between the parties to prosecute the undertaking, but their association was merely for mutual scientific investigation. The plaintiff produced witnesses and an outline of the contents of one of the works in the defendant's handwriting to show that he was for a period of several months busily and devotedly prosecuting his investigations, the results of which would probably be lost to him by the cessation of the joint enterprise. A verdict was rendered for plaintiff of $1,000.

On Boilers.---No. 8.

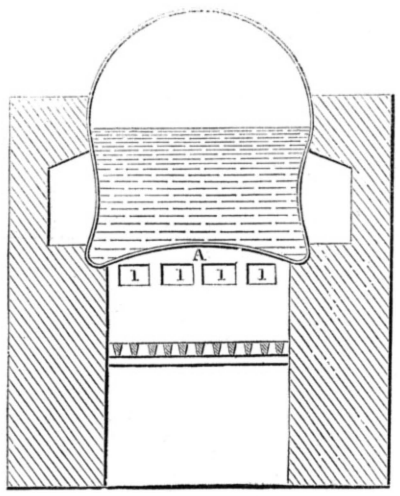
Fig. 16.



Prosser's Smoke Burner.—The accompanying engravings represent an improvement in furnaces, by Mr. R. Prosser, of Birmingham, England, patented in 1839.

Fig. 16 is a section lengthwise; the letter, A, indicating a wall of fire bricks in contact with the bottom of the boiler. This wall has apertures, 1 1, through which the gases of combustion must pass on their way to the chimney. The number and size of these apertures are varied to suit large or small boilers. Fig. 17 is a cross section, showing the wall, A, and the apertures through which the gases pass on their way to the chimney. It will be noticed that instead of the ordinary bridge. Mr. Prosser places the bridge at a distance from the ends of the fire-bars and close against the bottom of the boiler. The gases thus prevented from passing along the boiler in the ordinary way, are carried through flues or openings in the bridge to a chamber beyond the bridge, and thence to the chimney. The space between the end of the fire-bars and the

Fig. 17.



bridge, is of fire brick forming an inclined plane, upon which the red hot fuel is intended to be pushed, so as to keep these bricks heated, for the purpose of effecting the combustion of the gases of the coal. The economy of fuel, as stated by the inventor to have resulted from the improvement, is 23 per cent., said to have arisen from exposing so large a portion of the boiler bottom to the direct action of the radiant heat from the red-hot fuel.

Water Melon Butter.

A correspondent of the Prairie Farmer, presents the following method of using water-melons:—

I endeavor every year to raise a good water-melon patch. They are a healthy and delightful fruit, I think. I cultivate the ice rind variety; plant early in May, and again towards the close of the month, so that they may come in succession. When they commence ripening we commence eating, and use them freely during the hot weather. When the weather becomes cool in September, we haul a quantity of them to the house, split them open with a spoon, scrape out the pulps into a cullender, and strain the water into vessels. We boil it in iron vessels down to syrup, then put in apples or peaches, like making apple butter, and boil slowly, until the fruit is well cooked, then spice to taste, and you have something that most of people will prefer to apple butter, or any kind of preserves. Or the syrup may be boiled without fruit, down to molasses, which will be found to be as fine as the best sugar house molasses. We have made of a fall as much as ten gallons of the apple butter, if I may so call it, and molasses, which has kept until May in fine condition.

Liability of Telegraphs.

A case of Edward Shields, vs. the Washington and New Orleans Telegraph Co., was recently tried at New Orleans, and which determined several points of interest which should be known by every person in our country.

The plaintiff sued for $164 damages, arising from the incorrect transmission of a telegraphic dispatch, in which the word sixty-six was substituted in the price of oats for fifty-six, the correct number. The company refunded the cost of the despatch, but resisted any liability incurred by the mistake of the operator. As this is the first case of the kind tried, the principles laid down by the court are very interesting and important, as governing other cases. Judge Buchanan charged directly against any liability incurred by the company, for mistakes of this kind; because uncontrollable influences from atmospheric causes are likely to derange the wires and pervert a telegraphic message. It is unreasonable to apply the doctrine which applies to common carriers to a case like the present. The carrier is responsible for the merchandise entrusted to his care; but that merchandise has an appreciable value. The Judge says:—

What, on the contrary, is the test of appreciation of a despatch like that which the plaintiff received in this instance from his correspondent? The despatch read or said, oats fifty-six, bran one-ten, corn seventy-three, hay twenty-five. The person who sent the despatch made no explanation to the operator, and without explanation how could the operator know whether the numbers in question referred to dollars and cents or to bushels and bales? Again, how could the operator know whether the said despatch conveyed an order to purchase or an account of sales? and if he were bound to infer the former, what information did the despatch convey to his mind of the extent of the order? The meaning of the despatch was a secret to all but the parties corresponding. Under these circumstances the value of the message transmitted was inappreciable, and this telegraph company had no means of knowing the extent of the responsibility which ought to be involved in its correct transmission, upon the principles contended for by the counsel for the plaintiff.

The judgment was for plaintiff to the amount of three dollars and fifty cents—the cost of the message—which the company had offered to refund, and the costs of the court.

Great Artist Dead.

Turner, the great English painter, is dead. He was called the Claude Lorraine of Britain. He was at the very head of his profession, and arose, as all artists must do by the dint of genius. His father was poor, and he was more indebted to him for an exact than a liberal education. He is the painter so highly eulogised by Ruskin, the celebrated author.

LITERARY NOTICES.

The Model Courier—By Andrew McMakin, Philadelphia, is too well known to require eulogy from our pen; it is one of the best literary journals published in America, and is widely circulated. The editors and contributors rank among the ablest in our country. Terms $2.

Boston Museum—Edited and published by C. A. V. Putnam & Co., Boston, has just commenced a new volume, much improved in appearance. The Museum is a well-conducted journal, and deserves a large patronage. It circulates extensively, and is an excellent family journal. Terms $2.

Among the many excellent Agricultural journals published in the United States, we recommend "The Boston (Mass.) Cultivator;" weekly—$2; "Rural New Yorker," weekly—$2, Rochester, N. Y.; "American Farmer," monthly, Baltimore, Maryland—$1; "Southern Cultivator," monthly, Macon, Geo.—$1; "Prairie Farmer," monthly, Chicago, Ill.—$1; "Ohio Cultivator." monthly, Columbus, Ohio—$1; "Genesee Farmer, Rochester, N. Y., 50 cents.

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